FCC SAR TEST REPORT

FCC ID	:	**A4RG4S1M**
Equipment	:	**Phone**
Model Name	:	**GR0M2, G4S1M**
Applicant	:	**Google LLC 1600 Amphitheatre Parkway, Mountain View, California, 94043 USA**
Standard	:	**FCC 47 CFR Part 2 (2.1093)**

The product was received on Dec 16, 2020 and testing was started from Dec 26, 2020 and completed on Mar 10, 2021. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample provide by manufacturer and the test data has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been pass the FCC requirement.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Cona Huang / Deputy Manager

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History of this test report

Report No.	Version	Description	Issued Date
FA0O1508-01A	01	Initial issue of report	Apr. 07, 2021
FA0O1508-01A	02	1. Update section 2.2 and appendix D 2. Update section 3 3. Update Plimit table	Apr. 19, 2021

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for Google LLC, Phone, GR0M2, G4S1M, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary				Highest Simultaneous Transmission 1g SAR (W/kg)
		Head (Separation 0mm)	Body-worn (Separation 10mm)	Hotspot (Separation 10mm)	Product Specific (Separation 0mm)	
		1g SAR (W/kg)			10g SAR (W/kg)	
Licensed	GSM850	0.83	0.53	0.55		1.46
	GSM1900	0.22	0.60	0.79		
	WCDMA II	0.45	1.03	0.85		
	WCDMA IV	0.60	0.91	0.91		
	WCDMA V	0.97	0.47	0.51		
	LTE Band 7	0.52	0.92	0.80		
	LTE Band 12 / 17	0.90	0.47	0.47		
	LTE Band 13	0.82	0.41	0.41		
	LTE Band 14	0.77	0.43	0.43		
	LTE Band 2 / 25	0.53	0.86	0.99		
	LTE Band 5 / 26	0.89	0.47	0.45		
	LTE Band 30	0.33	0.87	0.87		
	LTE Band 38 / 41	0.31	0.91	0.91		
	LTE Band 48	0.47	1.09	0.90		
	LTE Band 4 / 66	0.49	0.97	0.89		
	LTE Band 71	0.56	0.45	0.45		
	FR1 n5	0.84	0.37	0.37		
	FR1 n77	0.26	0.59	0.59		
	FR1 n78	0.30	0.77	0.77		
DTS	2.4GHz WLAN	0.71	0.47	0.47		1.45
NII	5GHz WLAN	0.74	0.37	0.81	1.27	1.46
DSS	Bluetooth	0.13	0.12	0.12		1.46
Date of Testing:		2020/12/26 ~ 2021/3/10				

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test. This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR, 4.0 W/kg for Product Specific 10g SAR) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications

Reviewed by: Jason Wang
Report Producer: Carlie Tsai

2. Equipment Under Test (EUT) Information

2.1 General Information

Product Feature & Specification	
Equipment Name	Phone
Model Name	GR0M2, G4S1M
FCC ID	A4RG4S1M
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 71: 663 MHz ~ 698 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n78: 3700 MHz ~ 3800 MHz WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz WLAN U-NII 1: 5150 MHz ~ 5250 MHz WLAN U-NII 2: 5250 MHz ~ 5350 MHz WLAN U-NII 3: 5470 MHz ~ 5725 MHz WLAN U-NII 4: 5725 MHz ~ 5825 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA LTE: QPSK, 16QAM, 64QAM 5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM WLAN: 802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC:ASK
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.

Remark:

1. This device implements open loop antenna tuning techniques for several WWAN (cellular) operating modes. Specifically, this technique is employed in the GSM, WCDMA, CDMA and LTE modes. The detail descriptions of the antenna tuner are included in the operational description.
2. The device implements the power management and sensor detection for SAR compliance at different exposure conditions (head, body-worn, hotspot/extremity) and the Qualcomm smart transmit will manage to ensure the power level not exceeding the associated power table. Details about the power management decision and sesnor detection are provided in the operational description.
3. This device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation and Bluetooth support tethering applications.
4. The FCC ID: A4RG4S1M and FCC ID: A4RG1F8F are are HW identical except components depopulated for FR1 n41 component. Besides, LTE band 38 HPUE and 7C which are enabled by software, in this report spot check worst case from FCC ID: A4RG1F8F, in this report only full test 5G FR1 n77/n78, the evaluation procedure was via KDB inquiry.
5. If Spot check result for FCC ID: A4RG4S1M is higher than FCC ID: A4RG1F8F in each transmit antenna and frequency band, the result is used for the max SAR and Sim-Tx analysis.

2.2 Maximum Tune-up Limit

General Note:

1. For each cellular band, the device has several WWAN antennas, the antenna selection is based on the connection quality condition, and only one antenna will transmit at a time.
2. The device implements the power management and sensor detection for SAR compliance at different exposure conditions (head, body-worn, hotspot) by DSI and the Qualcomm Smart Transmit will manage to ensure the power level not exceeding the associated power table. Details about the power management decision and sensor detection are provided in the operational description.
3. Below table shows maximum tune up output power configured for this EUT for various transmit conditions (Device State Index DSI) by manufacturer, and the detail power measurement and tune-up limit refer to appendix D
4. In the table below which the DSI may have difference output power level. If some DSI output power measurement was not include in the appendix D, because the same output power level has been presented within the other DSI and use the same level to do SAR tested.
5. The DSI 0 was not used for SAR testing, the other DSI may have the same power levels but DSI 0 is covered for all modes under the mobile RF exposure evaluation, please refer to Sporton's test report FA0O1508-01B

Antenna configuration	
Config*	Support transmit antenna and band
Config 0	ANT 0: GSM850, UMTS B5, LTE B5/B12/B13/B14/B17/B26/B71, NR n5 ANT 2: GSM1900, UMTS B2/B4, LTE B2/B4/B7/B25/B30/B66/B38/B41 ANT 7: LTE B48, NR n77/n78
Config 1	ANT 0: GSM1900, UMTS B2/B4, LTE B2/B4/B7/B25/B30/B66/B38/B41 ANT 1: GSM850, UMTS B5, LTE B5/B12/B13/B14/B17/B26/B71, NR n5 ANT 2: LTE B48, NR n77/n78

*Config 0 and 1 means output ports of power measurement for different antennas and bands.

Config 0			Maximum Transmit Power Level (dBm)					
Radio Tech	Band Number	Antenna name	DSI_0	DSI_2	DSI_4	DSI_6	DSI_7	DSI_8
			Default	Head Standalone	Body Standalone	Hotspot Simultaneous Transmit	Head Simultaneous Transmit	Body Simultaneous Transmit
GSM/GPRS 1TX	850	ANT0	33.5	33.5	33.5	33.5	33.5	33.5
GPRS2TX	850	ANT0	32.5	32.5	32.5	32.5	32.5	32.5
GPRS3TX	850	ANT0	30.5	30.5	30.5	30.5	30.5	30.5
GPRS4TX	850	ANT0	29.5	29.5	29.5	29.5	29.5	29.5
EGPRS 1TX	850	ANT0	27.5	27.5	27.5	27.5	27.5	27.5
EGPRS 2TX	850	ANT0	27	27	27	27	27	27
EGPRS 3TX	850	ANT0	25	25	25	25	25	25
EGPRS 4TX	850	ANT0	23	23	23	23	23	23
GSM/GPRS 1TX	1900	ANT2	30.5	30.5	30.5	30.5	30.5	30.5
GPRS2TX	1900	ANT2	29.7	29.7	29.7	29.7	29.7	29.7
GPRS3TX	1900	ANT2	28	28	28	28	28	28
GPRS4TX	1900	ANT2	27	27	27	27	27	27
EGPRS 1TX	1900	ANT2	26.5	26.5	26.5	26.5	26.5	26.5
EGPRS 2TX	1900	ANT2	26	26	26	26	26	26
EGPRS 3TX	1900	ANT2	25	25	25	25	25	25
EGPRS 4TX	1900	ANT2	24	24	24	24	24	24
WCDMA AMR/RMC	B2	ANT2	25.7	25.7	25.7	24.9	25.7	24.9
WCDMA HSDPA/HSPA	B2	ANT2	24.7	24.7	24.7	23.9	24.7	23.9
WCDMA AMR/RMC	B4	ANT2	25.7	25.7	25.2	24.4	25.7	24.6
WCDMA HSDPA/HSPA	B4	ANT2	24.7	24.7	24.2	23.4	24.7	23.6
WCDMA AMR/RMC	B5	ANT0	25	25	25	25	25	25
WCDMA HSDPA/HSPA	B5	ANT0	24	24	24	24	24	24
LTE	B2	ANT2	25.7	25.7	24.8	24	25.7	24.4
LTE	B4	ANT2	25.7	25.7	24.8	24	25.7	24
LTE	B5	ANT0	25.7	25.7	25.7	25.7	25.7	25.7
LTE	B7	ANT2	25.7	25.7	24.1	23.3	25.7	23.3
LTE	B12	ANT0	25.7	25.7	25.7	25.7	25.7	25.7
LTE	B13	ANT0	25.2	25.2	25.2	25.2	25.2	25.2
LTE	B14	ANT0	25.7	25.7	25.7	25.7	25.7	25.7
LTE	B17	ANT0	25.7	25.7	25.7	25.7	25.7	25.7
LTE	B25	ANT2	25.7	25.7	24.8	24	25.7	24.4
LTE	B26	ANT0	25.7	25.7	25.7	25.7	25.7	25.7
LTE	B30	ANT2	24.2	24.2	24.2	24.2	24.2	24.2
LTE	B38	ANT2	25.7	25.7	25.7	25.7	25.7	25.7
LTE	B38 HPUE	ANT2	27.5	27.5	27.5	27.5	27.5	27.5
LTE	B41	ANT2	25.7	25.7	25.7	25.7	25.7	25.7
LTE	B48	ANT7	25.7	25.7	24.1	23.3	25.7	23.3
LTE	B66	ANT2	25.7	25.7	24.8	24	25.7	24
LTE	B71	ANT0	25.7	25.7	25.7	25.7	25.7	25.7
5G FR1	n5	ANT0	25	25	25	25	25	25
5G FR1	n77	ANT7	25.7	25.7	25.7	25.7	25.7	25.7
5G FR1	n78	ANT7	25	25	25	25	25	25
5G FR1	n78 HPUE	ANT7	26.5	26.5	26.5	26.5	26.5	26.5

Config 1			Maximum Transmit Power Level (dBm)					
Radio Tech	Band Number	Antenna name	DSI_0	DSI_2	DSI_4	DSI_6	DSI_7	DSI_8
			Default	Head Standalone	Body Standalone	Hotspot Simultaneous Transmit	Head Simultaneous Transmit	Body Simultaneous Transmit
GSM/GPRS 1TX	850	ANT1	32.2	32.2	32.2	32.2	32.2	32.2
GPRS2TX	850	ANT1	31.2	31.2	31.2	31.2	31.2	31.2
GPRS3TX	850	ANT1	29.2	29.2	29.2	29.2	29.2	29.2
GPRS4TX	850	ANT1	28.2	28.2	28.2	28.2	28.2	28.2
EGPRS 1TX	850	ANT1	26.5	26.5	26.5	26.5	26.5	26.5
EGPRS 2TX	850	ANT1	26	26	26	26	26	26
EGPRS 3TX	850	ANT1	24	24	24	24	24	24
EGPRS 4TX	850	ANT1	22	22	22	22	22	22
GSM/GPRS 1TX	1900	ANT0	30.2	30.2	30.2	30.2	30.2	30.2
GPRS2TX	1900	ANT0	29.7	29.7	29.7	29.7	29.7	29.7
GPRS3TX	1900	ANT0	27.7	27.7	27.7	27.7	27.7	27.7
GPRS4TX	1900	ANT0	26.7	26.7	26.7	26.7	26.7	26.7
EGPRS 1TX	1900	ANT0	26.5	26.5	26.5	26.5	26.5	26.5
EGPRS 2TX	1900	ANT0	26	26	26	26	26	26
EGPRS 3TX	1900	ANT0	25	25	25	25	25	25
EGPRS 4TX	1900	ANT0	24	24	24	24	24	24
WCDMA AMR/RMC	B2	ANT0	25.5	25.5	25.5	25.5	25.5	25.5
WCDMA HSDPA/HSPA	B2	ANT0	24.5	24.5	24.5	24.5	24.5	24.5
WCDMA AMR/RMC	B4	ANT0	25.5	25.5	25.5	25.5	25.5	25.5
WCDMA HSDPA/HSPA	B4	ANT0	24.5	24.5	24.5	24.5	24.5	24.5
WCDMA AMR/RMC	B5	ANT1	25	25	25	25	25	25
WCDMA HSDPA/HSPA	B5	ANT1	24	24	24	24	24	24
LTE	B2	ANT0	25.5	25.5	25.5	25.1	25.5	25.5
LTE	B4	ANT0	25.5	25.5	25.5	25.1	25.5	25.1
LTE	B5	ANT1	25	25	25	25	25	25
LTE	B7	ANT0	25.5	25.5	25.5	25.5	25.5	25.5
LTE	B12	ANT1	25.7	25.7	25.7	25.7	25.7	25.7
LTE	B13	ANT1	25	25	25	25	25	25
LTE	B14	ANT1	25	25	25	25	25	25
LTE	B17	ANT1	25	25	25	25	25	25
LTE	B25	ANT0	25.5	25.5	25.5	25.1	25.5	25.5
LTE	B26	ANT1	25	25	25	25	25	25
LTE	B30	ANT0	25.7	25.7	25.7	25.7	25.7	25.7
LTE	B38	ANT0	25.2	25.2	25.2	25.2	25.2	25.2
LTE	B38 HPUE	ANT0	26.7	26.7	26.7	26.7	26.7	26.7
LTE	B41	ANT0	25.5	25.5	25.5	25.5	25.5	25.5
LTE	B48	ANT2	25.7	25.7	24.9	24.1	25.7	24.1
LTE	B66	ANT0	25.5	25.5	25.5	25.1	25.5	25.1
LTE	B71	ANT1	25	25	25	25	25	25
5G FR1	n5	ANT1	25	25	25	25	25	25
5G FR1	n77	ANT2	25.5	25.5	25.5	25.5	25.5	25.5
5G FR1	n78	ANT2	25.5	25.5	25.5	25.5	25.5	25.5
5G FR1	n78 HPUE	ANT2	26	26	26	26	26	26

<WLAN Maximum Power>

General Note:

1. The device implements the power management for WLAN SAR compliance at different exposure conditions (head, body-worn, hotspot). The control logic about the power management decision is provided in the operational description.
2. The WLAN power table relate to each exposure condition is description below:
   a. Default Power Table: when operate at mobile condition.
   b. Body standalone and Body high as Power Table 1: when operate at body or extremity condition in standalone or transmit simultaneous with Bluetooth when WWAN off
   c. Power Table 2: when operate at head exposure condition.
   d. Body low as Power Table 3: when operate at hotspot or body exposure condition when transmit simultaneously with WWAN on.

<Default and Power Table 1>

<2.4GHz WLAN>

Transmit Antenna				SISO	SISO	MIMO		
	Mode	Channel	Frequency (MHz)	Ant 4 Tune-Up Limit	Ant 3 Tune-Up Limit	Ant 4+3(4) Tune-Up Limit	Ant 4+3(3) Tune-Up Limit	Ant 4+3 Tune-Up Limit
2.4GHz WLAN	802.11b 1Mbps	1	2412	20.00	20.00	20.00	20.00	23.0
		6	2437	20.00	20.00	20.00	20.00	23.0
		11	2462	20.00	20.00	20.00	20.00	23.0
	802.11g 6Mbps	1	2412	17.50	17.50	17.50	17.50	20.5
		6	2437	20.00	20.00	20.00	20.00	23.0
		11	2462	18.00	18.00	18.00	18.00	21.0
	802.11n-HT20 MCS0	1	2412	17.50	17.50	17.50	17.50	20.5
		6	2437	19.50	19.50	19.50	19.50	22.5
		11	2462	16.00	16.00	16.00	16.00	19.0
	802.11ac-VHT20 MCS0	1	2412	17.50	17.50	17.50	17.50	20.5
		6	2437	19.50	19.50	19.50	19.50	22.5
		11	2462	16.00	16.00	16.00	16.00	19.0

<5GHz WLAN>

Transmit Antenna				SISO	SISO	MIMO		
	Mode	Channel	Frequency (MHz)	Ant 4 Tune-Up Limit	Ant 3 Tune-Up Limit	Ant 4+3(4) Tune-Up Limit	Ant 4+3(3) Tune-Up Limit	Ant 4+3 Tune-Up Limit
5.2GHz WLAN	802.11a 6Mbps	36	5180	17.50	17.50	17.50	17.50	20.5
		40	5200	17.50	17.50	17.50	17.50	20.5
		44	5220	17.50	17.50	17.50	17.50	20.5
		48	5240	17.50	17.50	17.50	17.50	20.5
	802.11n-HT20 MCS0	36	5180	17.50	17.50	17.50	17.50	20.5
		40	5200	17.50	17.50	17.50	17.50	20.5
		44	5220	17.50	17.50	17.50	17.50	20.5
		48	5240	17.50	17.50	17.50	17.50	20.5
	802.11n-HT40 MCS0	38	5190	17.00	17.00	17.00	17.00	20.0
		46	5230	17.50	17.50	17.50	17.50	20.5
	802.11ac-VHT20 MCS0	36	5180	17.50	17.50	17.50	17.50	20.5
		40	5200	17.50	17.50	17.50	17.50	20.5
		44	5220	17.50	17.50	17.50	17.50	20.5
		48	5240	17.50	17.50	17.50	17.50	20.5
	802.11ac-VHT40 MCS0	38	5190	17.00	17.00	17.00	17.00	20.0
		46	5230	17.50	17.50	17.50	17.50	20.5
	802.11ac-VHT80 MCS0	42	5210	16.50	16.50	16.50	16.50	19.5

Transmit Antenna				SISO	SISO	MIMO		
	Mode	Channel	Frequency (MHz)	Ant 4 Tune-Up Limit	Ant 3 Tune-Up Limit	Ant 4+3(4) Tune-Up Limit	Ant 4+3(3) Tune-Up Limit	Ant 4+3 Tune-Up Limit
5.3GHz WLAN	802.11a 6Mbps	52	5260	17.50	17.50	17.50	17.50	20.5
		56	5280	17.50	17.50	17.50	17.50	20.5
		60	5300	17.50	17.50	17.50	17.50	20.5
		64	5320	17.50	17.50	17.50	17.50	20.5
	802.11n-HT20 MCS0	52	5260	17.50	17.50	17.50	17.50	20.5
		56	5280	17.50	17.50	17.50	17.50	20.5
		60	5300	17.50	17.50	17.50	17.50	20.5
		64	5320	17.50	17.50	17.50	17.50	20.5
	802.11n-HT40 MCS0	54	5270	17.50	17.50	17.50	17.50	20.5
		62	5310	17.00	17.00	17.00	17.00	20.0
	802.11ac-VHT20 MCS0	52	5260	17.50	17.50	17.50	17.50	20.5
		56	5280	17.50	17.50	17.50	17.50	20.5
		60	5300	17.50	17.50	17.50	17.50	20.5
		64	5320	17.50	17.50	17.50	17.50	20.5
	802.11ac-VHT40 MCS0	54	5270	17.50	17.50	17.50	17.50	20.5
		62	5310	17.00	17.00	17.00	17.00	20.0
	802.11ac-VHT80 MCS0	58	5290	16.00	16.00	16.00	16.00	19.0

Transmit Antenna				SISO	SISO	MIMO		
	Mode	Channel	Frequency (MHz)	Ant 4 Tune-Up Limit	Ant 3 Tune-Up Limit	Ant 4+3(4) Tune-Up Limit	Ant 4+3(3) Tune-Up Limit	Ant 4+3 Tune-Up Limit
5.5GHz WLAN	802.11a 6Mbps	100	5500	17.50	17.50	17.50	17.50	20.5
		116	5580	17.50	17.50	17.50	17.50	20.5
		124	5620	17.50	17.50	17.50	17.50	20.5
		132	5660	17.50	17.50	17.50	17.50	20.5
		140	5700	17.50	17.50	17.50	17.50	20.5
		144	5720	17.50	17.50	17.50	17.50	20.5
	802.11n-HT20 MCS0	100	5500	17.50	17.50	17.50	17.50	20.5
		116	5580	17.50	17.50	17.50	17.50	20.5
		124	5620	17.50	17.50	17.50	17.50	20.5
		132	5660	17.50	17.50	17.50	17.50	20.5
		140	5700	17.50	17.50	17.50	17.50	20.5
		144	5720	17.50	17.50	17.50	17.50	20.5
	802.11n-HT40 MCS0	102	5510	16.00	16.00	16.00	16.00	19.0
		110	5550	17.50	17.50	17.50	17.50	20.5
		126	5630	17.50	17.50	17.50	17.50	20.5
		134	5670	17.50	17.50	17.50	17.50	20.5
		142	5710	17.50	17.50	17.50	17.50	20.5
	802.11ac-VHT20 MCS0	100	5500	17.50	17.50	17.50	17.50	20.5
		116	5580	17.50	17.50	17.50	17.50	20.5
		124	5620	17.50	17.50	17.50	17.50	20.5
		132	5660	17.50	17.50	17.50	17.50	20.5
		140	5700	17.50	17.50	17.50	17.50	20.5
		144	5720	17.50	17.50	17.50	17.50	20.5
	802.11ac-VHT40 MCS0	102	5510	16.00	16.00	16.00	16.00	19.0
		110	5550	17.50	17.50	17.50	17.50	20.5
		126	5630	17.50	17.50	17.50	17.50	20.5
		134	5670	17.50	17.50	17.50	17.50	20.5
		142	5710	17.50	17.50	17.50	17.50	20.5
	802.11ac-VHT80 MCS0	106	5530	14.50	14.50	14.50	14.50	17.5
		122	5610	17.00	17.00	17.00	17.00	20.0
		138	5690	17.00	17.00	17.00	17.00	20.0

Transmit Antenna				SISO	SISO	MIMO		
	Mode	Channel	Frequency (MHz)	Ant 4 Tune-Up Limit	Ant 3 Tune-Up Limit	Ant 4+3(4) Tune-Up Limit	Ant 4+3(3) Tune-Up Limit	Ant 4+3 Tune-Up Limit
5.8GHz WLAN	802.11a 6Mbps	149	5745	19.50	19.50	19.50	19.50	22.5
		157	5785	19.50	19.50	19.50	19.50	22.5
		165	5825	19.50	19.50	19.50	19.50	22.5
	802.11n-HT20 MCS0	149	5745	19.50	19.50	19.50	19.50	22.5
		157	5785	19.50	19.50	19.50	19.50	22.5
		165	5825	19.50	19.50	19.50	19.50	22.5
	802.11n-HT40 MCS0	151	5755	17.50	17.50	17.50	17.50	20.5
		159	5795	17.50	17.50	17.50	17.50	20.5
	802.11ac-VHT20 MCS0	149	5745	19.50	19.50	19.50	19.50	22.5
		157	5785	19.50	19.50	19.50	19.50	22.5
		165	5825	19.50	19.50	19.50	19.50	22.5
	802.11ac-VHT40 MCS0	151	5755	17.50	17.50	17.50	17.50	20.5
		159	5795	17.50	17.50	17.50	17.50	20.5
	802.11ac-VHT80 MCS0	155	5775	17.00	17.00	17.00	17.00	20.0

<Power Table 2>

<2.4GHz WLAN>

Transmit Antenna				SISO	SISO	MIMO		
	Mode	Channel	Frequency (MHz)	Ant 4 Tune-Up Limit	Ant 3 Tune-Up Limit	Ant 4+3(4) Tune-Up Limit	Ant 4+3(3) Tune-Up Limit	Ant 4+3 Tune-Up Limit
2.4GHz WLAN	802.11b 1Mbps	1	2412	16.00	19.00	18.00	20.00	22.1
		6	2437	16.00	19.00	18.00	20.00	22.1
		11	2462	16.00	19.00	18.00	20.00	22.1
	802.11g 6Mbps	1	2412	16.00	17.50	17.50	17.50	20.5
		6	2437	16.00	19.00	18.00	20.00	22.1
		11	2462	16.00	18.00	18.00	18.00	21.0
	802.11n-HT20 MCS0	1	2412	16.00	17.50	17.50	17.50	20.5
		6	2437	16.00	19.00	18.00	19.50	21.8
		11	2462	16.00	16.00	16.00	16.00	19.0
	802.11ac-VHT20 MCS0	1	2412	16.00	17.50	17.50	17.50	20.5
		6	2437	16.00	19.00	18.00	19.50	21.8
		11	2462	16.00	16.00	16.00	16.00	19.0

<5GHz WLAN>

Transmit Antenna				SISO	SISO	MIMO		
	Mode	Channel	Frequency (MHz)	Ant 4 Tune-Up Limit	Ant 3 Tune-Up Limit	Ant 4+3(4) Tune-Up Limit	Ant 4+3(3) Tune-Up Limit	Ant 4+3 Tune-Up Limit
5.2GHz WLAN	802.11a 6Mbps	36	5180	15.50	17.00	15.50	17.50	19.6
		40	5200	15.50	17.00	15.50	17.50	19.6
		44	5220	15.50	17.00	15.50	17.50	19.6
		48	5240	15.50	17.00	15.50	17.50	19.6
	802.11n-HT20 MCS0	36	5180	15.50	17.00	15.50	17.50	19.6
		40	5200	15.50	17.00	15.50	17.50	19.6
		44	5220	15.50	17.00	15.50	17.50	19.6
		48	5240	15.50	17.00	15.50	17.50	19.6
	802.11n-HT40 MCS0	38	5190	15.50	17.00	15.50	17.00	19.3
		46	5230	15.50	17.00	15.50	17.50	19.6
	802.11ac-VHT20 MCS0	36	5180	15.50	17.00	15.50	17.50	19.6
		40	5200	15.50	17.00	15.50	17.50	19.6
		44	5220	15.50	17.00	15.50	17.50	19.6
		48	5240	15.50	17.00	15.50	17.50	19.6
	802.11ac-VHT40 MCS0	38	5190	15.50	17.00	15.50	17.00	19.3
		46	5230	15.50	17.00	15.50	17.50	19.6
	802.11ac-VHT80 MCS0	42	5210	15.50	16.50	15.50	16.50	19.0

Transmit Antenna				SISO	SISO	MIMO		
	Mode	Channel	Frequency (MHz)	Ant 4 Tune-Up Limit	Ant 3 Tune-Up Limit	Ant 4+3(4) Tune-Up Limit	Ant 4+3(3) Tune-Up Limit	Ant 4+3 Tune-Up Limit
5.3GHz WLAN	802.11a 6Mbps	52	5260	15.50	17.00	15.50	17.50	19.6
		56	5280	15.50	17.00	15.50	17.50	19.6
		60	5300	15.50	17.00	15.50	17.50	19.6
		64	5320	15.50	17.00	15.50	17.50	19.6
	802.11n-HT20 MCS0	52	5260	15.50	17.00	15.50	17.50	19.6
		56	5280	15.50	17.00	15.50	17.50	19.6
		60	5300	15.50	17.00	15.50	17.50	19.6
		64	5320	15.50	17.00	15.50	17.50	19.6
	802.11n-HT40 MCS0	54	5270	15.50	17.00	15.50	17.50	19.6
		62	5310	15.50	17.00	15.50	17.00	19.3
	802.11ac-VHT20 MCS0	52	5260	15.50	17.00	15.50	17.50	19.6
		56	5280	15.50	17.00	15.50	17.50	19.6
		60	5300	15.50	17.00	15.50	17.50	19.6
		64	5320	15.50	17.00	15.50	17.50	19.6
	802.11ac-VHT40 MCS0	54	5270	15.50	17.00	15.50	17.50	19.6
		62	5310	15.50	17.00	15.50	17.00	19.3
	802.11ac-VHT80 MCS0	58	5290	15.50	16.00	15.50	16.00	18.8

Transmit Antenna				SISO	SISO	MIMO		
	Mode	Channel	Frequency (MHz)	Ant 4 Tune-Up Limit	Ant 3 Tune-Up Limit	Ant 4+3(4) Tune-Up Limit	Ant 4+3(3) Tune-Up Limit	Ant 4+3 Tune-Up Limit
5.5GHz WLAN	802.11a 6Mbps	100	5500	14.50	15.00	14.50	15.50	18.0
		116	5580	14.50	15.00	14.50	15.50	18.0
		124	5620	14.50	15.00	14.50	15.50	18.0
		132	5660	14.50	15.00	14.50	15.50	18.0
		140	5700	14.50	15.00	14.50	15.50	18.0
		144	5720	14.50	15.00	14.50	15.50	18.0
	802.11n-HT20 MCS0	100	5500	14.50	15.00	14.50	15.50	18.0
		116	5580	14.50	15.00	14.50	15.50	18.0
		124	5620	14.50	15.00	14.50	15.50	18.0
		132	5660	14.50	15.00	14.50	15.50	18.0
		140	5700	14.50	15.00	14.50	15.50	18.0
		144	5720	14.50	15.00	14.50	15.50	18.0
	802.11n-HT40 MCS0	102	5510	14.50	15.00	14.50	15.50	18.0
		110	5550	14.50	15.00	14.50	15.50	18.0
		126	5630	14.50	15.00	14.50	15.50	18.0
		134	5670	14.50	15.00	14.50	15.50	18.0
		142	5710	14.50	15.00	14.50	15.50	18.0
	802.11ac-VHT20 MCS0	100	5500	14.50	15.00	14.50	15.50	18.0
		116	5580	14.50	15.00	14.50	15.50	18.0
		124	5620	14.50	15.00	14.50	15.50	18.0
		132	5660	14.50	15.00	14.50	15.50	18.0
		140	5700	14.50	15.00	14.50	15.50	18.0
		144	5720	14.50	15.00	14.50	15.50	18.0
	802.11ac-VHT40 MCS0	102	5510	14.50	15.00	14.50	15.50	18.0
		110	5550	14.50	15.00	14.50	15.50	18.0
		126	5630	14.50	15.00	14.50	15.50	18.0
		134	5670	14.50	15.00	14.50	15.50	18.0
		142	5710	14.50	15.00	14.50	15.50	18.0
	802.11ac-VHT80 MCS0	106	5530	14.50	14.50	14.50	14.50	17.5
		122	5610	14.50	15.00	14.50	15.50	18.0
		138	5690	14.50	15.00	14.50	15.50	18.0

Transmit Antenna				SISO	SISO	MIMO		
	Mode	Channel	Frequency (MHz)	Ant 4 Tune-Up Limit	Ant 3 Tune-Up Limit	Ant 4+3(4) Tune-Up Limit	Ant 4+3(3) Tune-Up Limit	Ant 4+3 Tune-Up Limit
5.8GHz WLAN	802.11a 6Mbps	149	5745	15.00	15.00	14.50	17.00	18.9
		157	5785	15.00	15.00	14.50	17.00	18.9
		165	5825	15.00	15.00	14.50	17.00	18.9
	802.11n-HT20 MCS0	149	5745	15.00	15.00	14.50	17.00	18.9
		157	5785	15.00	15.00	14.50	17.00	18.9
		165	5825	15.00	15.00	14.50	17.00	18.9
	802.11n-HT40 MCS0	151	5755	15.00	15.00	14.50	17.00	18.9
		159	5795	15.00	15.00	14.50	17.00	18.9
	802.11ac-VHT20 MCS0	149	5745	15.00	15.00	14.50	17.00	18.9
		157	5785	15.00	15.00	14.50	17.00	18.9
		165	5825	15.00	15.00	14.50	17.00	18.9
	802.11ac-VHT40 MCS0	151	5755	15.00	15.00	14.50	17.00	18.9
		159	5795	15.00	15.00	14.50	17.00	18.9
	802.11ac-VHT80 MCS0	155	5775	15.00	15.00	14.50	17.00	18.9

<Power Table 3>

<2.4GHz WLAN>

Transmit Antenna				SISO	SISO	MIMO		
	Mode	Channel	Frequency (MHz)	Ant 4 Tune-Up Limit	Ant 3 Tune-Up Limit	Ant 4+3(4) Tune-Up Limit	Ant 4+3(3) Tune-Up Limit	Ant 4+3 Tune-Up Limit
2.4GHz WLAN	802.11b 1Mbps	1	2412	20.00	20.00	20.00	20.00	23.0
		6	2437	20.00	20.00	20.00	20.00	23.0
		11	2462	20.00	20.00	20.00	20.00	23.0
	802.11g 6Mbps	1	2412	17.50	17.50	17.50	17.50	20.5
		6	2437	20.00	20.00	20.00	20.00	23.0
		11	2462	18.00	18.00	18.00	18.00	21.0
	802.11n-HT20 MCS0	1	2412	17.50	17.50	17.50	17.50	20.5
		6	2437	19.50	19.50	19.50	19.50	22.5
		11	2462	16.00	16.00	16.00	16.00	19.0
	802.11ac-VHT20 MCS0	1	2412	17.50	17.50	17.50	17.50	20.5
		6	2437	19.50	19.50	19.50	19.50	22.5
		11	2462	16.00	16.00	16.00	16.00	19.0

<5GHz WLAN>

Transmit Antenna				SISO	SISO	MIMO		
	Mode	Channel	Frequency (MHz)	Ant 4 Tune-Up Limit	Ant 3 Tune-Up Limit	Ant 4+3(4) Tune-Up Limit	Ant 4+3(3) Tune-Up Limit	Ant 4+3 Tune-Up Limit
5.2GHz WLAN	802.11a 6Mbps	36	5180	17.50	17.50	17.50	17.50	20.5
		40	5200	17.50	17.50	17.50	17.50	20.5
		44	5220	17.50	17.50	17.50	17.50	20.5
		48	5240	17.50	17.50	17.50	17.50	20.5
	802.11n-HT20 MCS0	36	5180	17.50	17.50	17.50	17.50	20.5
		40	5200	17.50	17.50	17.50	17.50	20.5
		44	5220	17.50	17.50	17.50	17.50	20.5
		48	5240	17.50	17.50	17.50	17.50	20.5
	802.11n-HT40 MCS0	38	5190	17.00	17.00	17.00	17.00	20.0
		46	5230	17.50	17.50	17.50	17.50	20.5
	802.11ac-VHT20 MCS0	36	5180	17.50	17.50	17.50	17.50	20.5
		40	5200	17.50	17.50	17.50	17.50	20.5
		44	5220	17.50	17.50	17.50	17.50	20.5
		48	5240	17.50	17.50	17.50	17.50	20.5
	802.11ac-VHT40 MCS0	38	5190	17.00	17.00	17.00	17.00	20.0
		46	5230	17.50	17.50	17.50	17.50	20.5
	802.11ac-VHT80 MCS0	42	5210	16.50	16.50	16.50	16.50	19.5

Transmit Antenna				SISO	SISO	MIMO		
	Mode	Channel	Frequency (MHz)	Ant 4 Tune-Up Limit	Ant 3 Tune-Up Limit	Ant 4+3(4) Tune-Up Limit	Ant 4+3(3) Tune-Up Limit	Ant 4+3 Tune-Up Limit
5.3GHz WLAN	802.11a 6Mbps	52	5260	17.50	17.50	17.50	17.50	20.5
		56	5280	17.50	17.50	17.50	17.50	20.5
		60	5300	17.50	17.50	17.50	17.50	20.5
		64	5320	17.50	17.50	17.50	17.50	20.5
	802.11n-HT20 MCS0	52	5260	17.50	17.50	17.50	17.50	20.5
		56	5280	17.50	17.50	17.50	17.50	20.5
		60	5300	17.50	17.50	17.50	17.50	20.5
		64	5320	17.50	17.50	17.50	17.50	20.5
	802.11n-HT40 MCS0	54	5270	17.50	17.50	17.50	17.50	20.5
		62	5310	17.00	17.00	17.00	17.00	20.0
	802.11ac-VHT20 MCS0	52	5260	17.50	17.50	17.50	17.50	20.5
		56	5280	17.50	17.50	17.50	17.50	20.5
		60	5300	17.50	17.50	17.50	17.50	20.5
		64	5320	17.50	17.50	17.50	17.50	20.5
	802.11ac-VHT40 MCS0	54	5270	17.50	17.50	17.50	17.50	20.5
		62	5310	17.00	17.00	17.00	17.00	20.0
	802.11ac-VHT80 MCS0	58	5290	16.00	16.00	16.00	16.00	19.0

Transmit Antenna				SISO	SISO	MIMO		
	Mode	Channel	Frequency (MHz)	Ant 4 Tune-Up Limit	Ant 3 Tune-Up Limit	Ant 4+3(4) Tune-Up Limit	Ant 4+3(3) Tune-Up Limit	Ant 4+3 Tune-Up Limit
5.5GHz WLAN	802.11a 6Mbps	100	5500	17.50	15.00	17.50	17.50	20.5
		116	5580	17.50	15.00	17.50	17.50	20.5
		124	5620	17.50	15.00	17.50	17.50	20.5
		132	5660	17.50	15.00	17.50	17.50	20.5
		140	5700	17.50	15.00	17.50	17.50	20.5
		144	5720	17.50	15.00	17.50	17.50	20.5
	802.11n-HT20 MCS0	100	5500	17.50	15.00	17.50	17.50	20.5
		116	5580	17.50	15.00	17.50	17.50	20.5
		124	5620	17.50	15.00	17.50	17.50	20.5
		132	5660	17.50	15.00	17.50	17.50	20.5
		140	5700	17.50	15.00	17.50	17.50	20.5
		144	5720	17.50	15.00	17.50	17.50	20.5
	802.11n-HT40 MCS0	102	5510	16.00	15.00	16.00	16.00	19.0
		110	5550	17.50	15.00	17.50	17.50	20.5
		126	5630	17.50	15.00	17.50	17.50	20.5
		134	5670	17.50	15.00	17.50	17.50	20.5
		142	5710	17.50	15.00	17.50	17.50	20.5
	802.11ac-VHT20 MCS0	100	5500	17.50	15.00	17.50	17.50	20.5
		116	5580	17.50	15.00	17.50	17.50	20.5
		124	5620	17.50	15.00	17.50	17.50	20.5
		132	5660	17.50	15.00	17.50	17.50	20.5
		140	5700	17.50	15.00	17.50	17.50	20.5
		144	5720	17.50	15.00	17.50	17.50	20.5
	802.11ac-VHT40 MCS0	102	5510	16.00	15.00	16.00	16.00	19.0
		110	5550	17.50	15.00	17.50	17.50	20.5
		126	5630	17.50	15.00	17.50	17.50	20.5
		134	5670	17.50	15.00	17.50	17.50	20.5
		142	5710	17.50	15.00	17.50	17.50	20.5
	802.11ac-VHT80 MCS0	106	5530	14.50	14.50	14.50	14.50	17.5
		122	5610	17.00	15.00	17.00	17.00	20.0
		138	5690	17.00	15.00	17.00	17.00	20.0

Transmit Antenna				SISO	SISO	MIMO		
	Mode	Channel	Frequency (MHz)	Ant 4 Tune-Up Limit	Ant 3 Tune-Up Limit	Ant 4+3(4) Tune-Up Limit	Ant 4+3(3) Tune-Up Limit	Ant 4+3 Tune-Up Limit
5.8GHz WLAN	802.11a 6Mbps	149	5745	19.50	17.50	19.50	19.50	22.5
		157	5785	19.50	17.50	19.50	19.50	22.5
		165	5825	19.50	17.50	19.50	19.50	22.5
	802.11n-HT20 MCS0	149	5745	19.50	17.50	19.50	19.50	22.5
		157	5785	19.50	17.50	19.50	19.50	22.5
		165	5825	19.50	17.50	19.50	19.50	22.5
	802.11n-HT40 MCS0	151	5755	17.50	17.50	17.50	17.50	20.5
		159	5795	17.50	17.50	17.50	17.50	20.5
	802.11ac-VHT20 MCS0	149	5745	19.50	17.50	19.50	19.50	22.5
		157	5785	19.50	17.50	19.50	19.50	22.5
		165	5825	19.50	17.50	19.50	19.50	22.5
	802.11ac-VHT40 MCS0	151	5755	17.50	17.50	17.50	17.50	20.5
		159	5795	17.50	17.50	17.50	17.50	20.5
	802.11ac-VHT80 MCS0	155	5775	17.00	17.00	17.00	17.00	20.0

<Bluetooth Maximum Power>

General Note:

1. The device implements the power management for Bluetooth SAR compliance at different exposure conditions (head, body-worn, hotspot). The control logic about the power management decision is provided in the operational description.
2. The Bluetooth power table relate to each exposure condition is description below:
   a. Default Power Table: when operate at mobile condition.
   b. Body standalone and body high as Power Table 1: when operate at body or extremity condition in standalone or transmit simultaneous with WLAN when WWAN off or transmit simultaneous with WWAN when WLAN off.
   c. Power Table 2: when operate at head exposure condition.
   d. Body low as Power Table 3: when operate at hotspot or body exposure condition and transmit simultaneously with WWAN/WLAN on.

<Default Power Table 1, 3>

Mode	Average power (dBm)				
	BR / EDR			LE	
	1Mbps	2Mbps	3Mbps	1Mbps	2Mbps
Tune-up Limit	18	18	18	18	18

<Power Table 2>

Mode	Average power (dBm)				
	BR / EDR			LE	
	1Mbps	2Mbps	3Mbps	1Mbps	2Mbps
Tune-up Limit	14.5	14.5	14.5	14.5	14.5

2.3 General LTE SAR Test and Reporting Considerations

<table>
<tr><th colspan="2">Summarized necessary items addressed in KDB 941225 D05 v02r05</th></tr>
<tr><td>FCC ID</td><td>A4RG4S1M</td></tr>
<tr><td>Equipment Name</td><td>Phone</td></tr>
<tr><td>Operating Frequency Range of each LTE transmission band</td><td>LTE Band 2: 1850 MHz ~ 1910 MHz
LTE Band 4: 1710 MHz ~ 1755 MHz
LTE Band 5: 824 MHz ~ 849 MHz
LTE Band 7: 2500 MHz ~ 2570 MHz
LTE Band 12: 699 MHz ~ 716 MHz
LTE Band 13: 777 MHz ~ 787 MHz
LTE Band 14: 788 MHz ~ 798 MHz
LTE Band 17: 704 MHz ~ 716 MHz
LTE Band 25: 1850 MHz ~ 1915 MHz
LTE Band 26: 814 MHz ~ 849 MHz
LTE Band 30: 2305 MHz ~ 2315 MHz
LTE Band 38: 2570 MHz ~ 2620 MHz
LTE Band 41: 2496 MHz ~ 2690 MHz
LTE Band 48: 3550 MHz ~ 3700 MHz
LTE Band 66: 1710 MHz ~ 1780 MHz
LTE Band 71: 663 MHz ~ 698 MHz</td></tr>
<tr><td>Channel Bandwidth</td><td>LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 13: 5MHz, 10MHz
LTE Band 14: 5MHz, 10MHz
LTE Band 17: 5MHz, 10MHz
LTE Band 25:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz
LTE Band 30: 5MHz, 10MHz
LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 48: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 71: 5MHz, 10MHz, 15MHz, 20MHz</td></tr>
<tr><td>uplink modulations used</td><td>QPSK / 16QAM / 64QAM</td></tr>
<tr><td>LTE Voice / Data requirements</td><td>Voice and Data</td></tr>
<tr><td>LTE MPR permanently built-in by design</td><td>
Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr>
<tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr>
<tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr>
<tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</td></tr>
</table>
</td></tr>
<tr><td>LTE A-MPR</td><td>In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)</td></tr>
<tr><td>Spectrum plots for RB configuration</td><td>A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.</td></tr>
<tr><td>Power reduction applied to satisfy SAR compliance</td><td>The device has several different power modes for each exposure conditions SAR compliance; power selection is determined by the device's positioning and usage scenarios. Detail refer to operational description.</td></tr>
<tr><td>LTE Carrier Aggregation Combinations</td><td>Inter-Band and Intra-Band possible combinations and the detail power measurement please referred to section 13.</td></tr>
<tr><td>LTE Carrier Aggregation Additional Information</td><td>This device supports maximum of 4 carriers in the downlink and 2 carriers in the uplink. Additional following LTE Release features are not supported: Relay, HetNet, Enhanced MIMO, eICI, WiFi Offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA.</td></tr>
</table>

Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 5								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844
LTE Band 7								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510
M	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560
LTE Band 12								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711
LTE Band 13				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq.(MHz)
L	23205	779.5	23230	782
M	23230	782		
H	23255	784.5		
LTE Band 14				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Channel #	Channel #	Freq.(MHz)
L	23305	790.5	23330	793
M	23330	793		
H	23355	795.5		
LTE Band 17				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq. (MHz)
L	23755	706.5	23780	709
M	23790	710	23790	710
H	23825	713.5	23800	711

LTE Band 25												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905

LTE Band 26										
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5

LTE Band 30				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq.(MHz)
L	27685	2307.5	27710	2310
M	27710	2310		
H	27735	2312.5		

LTE Band 38								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580
M	38000	2595	38000	2595	38000	2595	38000	2595
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610

LTE Band 41								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680

LTE Band 48								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	55265	3552.5	55290	3555	55315	3557.5	55340	3560
LM	55810	3607	55815	3607.5	55820	3608	55830	3609
MH	56170	3643	56165	3642.5	56160	3642	56150	3641
H	56715	3697.5	56690	3695	56665	3692.5	56640	3690

LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770

LTE Band 71								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	133147	665.5	133172	668	133197	670.5	133222	673
M	133297	680.5	133297	680.5	133297	680.5	133297	680.5
H	133447	695.5	133422	693	133397	690.5	133372	688

2.4 General 5G NR SAR Test and Reporting Considerations

5G NR Information	
FCC	A4RG4S1M
Equipment Name	Phone
Operating Frequency Range of each 5G NR transmission band	5G NR n5: 824 MHz ~ 849 MHz 5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n78: 3700 MHz ~ 3800 MHz
Channel Bandwidth	5G NR n5: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n77: 20MHz, 40MHz, 100MHz 5G NR n78: 20MHz, 40MHz, 50MHz, 60MHz, 80MHz, 90MHz, 100MHz
SCS	FDD: SCS15KHz, TDD: SCS30KHz
uplink modulations used	DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CP-OFDM QPSK / 16QAM / 64QAM / 256QAM
A-MPR (Additional MPR) disabled for SAR Testing?	Yes
LTE Anchor Bands for n5	LTE B2/7/30/48/66
LTE Anchor Bands for n77	LTE B2/13/41/66
LTE Anchor Bands for n78	LTE B2/4/5/7/12/13/38/41/66/71

Transmission (H, M, L) channel numbers and frequencies in each 5G NR band

NR Band 5

	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	165300	826.5	165800	829	166300	831.5	166800	834
M	167300	836.5	167300	836.5	167300	836.5	167300	836.5
H	169300	846.5	168800	844	168300	841.5	167800	839

NR Band 77

	Bandwidth 20MHz		Bandwidth 40MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	647334	3710.01	648000	3720	650000	3750
M	656000	3840	656000	3840	656000	3840
H	664668	3970.02	664000	3960	662000	3930

NR Band 78

	Bandwidth 20MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	647334	3710.01	648000	3720	648334	3725.01	648668	3730.02	649334	3740.01	649668	3745.02		
M	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750
H	652668	3790.02	652000	3780	651668	3775.02	651334	3770.01	650668	3760.02	650334	3755.01		

3. Smart Transmit feature for RF Exposure compliance

The FCC RF exposure limit is defined based on time-averaged RF exposure. The product implements Qualcomm Smart Transmit feature which controls the instantaneous transmitting power for WWAN transmitter to ensure the product in compliance with FCC RF exposure limit over a defined time window, for SAR (transmit frequency ≤ 6GHz). To control and manage transmitting power in real time and to ensure at all times the time-averaged RF exposure is compliant to the regulation requirement.

This report describes the procedures for the SAR char generation, and the parameters obtained from SAR characterization (referred to as SAR char, respectively) will be used as input for Smart Transmit. SAR char will be entered via the Embedded File System (EFS) to enable the Smart Transmit Feature.

<Terminologies in this report>

P_{limit}	The time-averaged RF power which corresponds to SAR_design_target.
P_{max}	Maximum target power level
SAR_design_target:	The design target for SAR compliance. It should be less than regulatory power density limit to account for all device design related uncertainties.
SAR char	P_{limit} for all the technologies/bands for all applicable DSI

<SAR Characterization>

SAR char must be generated to cover all radio configurations and usage scenarios that the wireless device supports for operating at 6 GHz or below. It will then be used as input for Smart Transmit to control and manage RF exposure for f < 6 GHz.

<SAR design target and uncertainty>

The detail SAR design target relate to each exposure conditions pls refer to operation description

Total Uncertainty					
Config 0			Config 1		
Wireless Technology Band	Antenna	Uncertainty dB (k=2)	Wireless Technology Band	Antenna	Uncertainty dB (k=2)
GSM 850	ANT0	1.0	GSM 850	ANT1	0.7
GSM 1900	ANT2	1.0	GSM 1900	ANT0	0.7
WCDMA B2	ANT2	1.0	WCDMA B2	ANT0	1.5
WCDMA B4	ANT2	1.0	WCDMA B4	ANT0	1.5
WCDMA B5	ANT0	1.0	WCDMA B5	ANT1	1.5
LTE B2	ANT2	1.0	LTE B2	ANT0	1.5
LTE B4	ANT2	1.0	LTE B4	ANT0	1.5
LTE B5	ANT0	1.0	LTE B5	ANT1	1.5
LTE B7	ANT2	1.0	LTE B7	ANT0	1.5
LTE B12	ANT0	1.0	LTE B12	ANT1	1.0
LTE B13	ANT0	1.0	LTE B13	ANT1	1.5
LTE B14	ANT0	1.0	LTE B14	ANT1	1.5
LTE B17	ANT0	1.0	LTE B17	ANT1	1.5
LTE B25	ANT2	1.0	LTE B25	ANT0	1.5
LTE B26	ANT0	1.0	LTE B26	ANT1	1.5
LTE B30	ANT2	1.0	LTE B30	ANT0	1.0
LTE B38	ANT2	1.0	LTE B38	ANT0	1.2
LTE B41	ANT2	1.0	LTE B41	ANT0	1.5
LTE B48	ANT7	1.0	LTE B48	ANT2	1.0
LTE B66	ANT2	1.0	LTE B66	ANT0	1.5
LTE B71	ANT0	1.0	LTE B71	ANT1	1.5
NR n5	ANT0	1.0	NR n5	ANT1	1.5
NR n77	ANT7	1.0	NR n77	ANT2	1.5
NR n78	ANT7	1.0	NR n78	ANT2	1.5

To account for total uncertainty, SAR_design_target should be determined as:

$$SAR\_design\_target \ < SAR_{regulatory\_limit} \times 10^{\frac{-total\ uncertainty}{10}}$$

The Smart Transmit algorithm maintains the time-averaged transmit power, in turn, time-averaged RF exposure of SAR_design_target or PD_design_target, below the predefined time-averaged power limit (i.e., input.power.limit for 5G mmW NR), for each characterized technology and band (refer to RF exposure part0 report)

Smart Transmit allows the device to transmit at higher power instantaneously, as high as Pmax, when needed, but enforces power limiting to maintain time-averaged transmit power to Plimit. Below table shows Plimit EFS settings and maximum tune up output power Pmax configured for this EUT for various transmit conditions (Device State Index DSI).

<P_{limit} for supported technologies and bands (P_{limit} in EFS file)>

Config 0

Band	Config	Antenna	TDD duty cycle	Head		Hotspot	Body-worn/Extremity		PMax*
				Standalone	Simultaneous	Simultaneous	Standalone	Simultaneous	
				DSI 2	DSI 7	DSI 6	DSI 4	DSI 8	
GSM850(GPRS 4 Tx slots)**	0	0	50.00%	30.0	29.2	28.4	29.2	28.4	25.5
GSM1900(GPRS 4 Tx slots)**	0	2	50.00%	30.2	29.4	24.4	25.6	24.8	23.0
WCDMA B2	0	2	100.00%	31.0	30.2	24.1	25.0	24.2	24.7
WCDMA B4	0	2	100.00%	30.2	29.4	24.3	25.1	24.3	24.7
WCDMA B5	0	0	100.00%	29.3	28.5	28.0	28.8	28.0	24.0
LTE B7	0	2	100.00%	29.5	28.7	22.7	23.5	22.8	24.7
LTE B12/17	0	0	100.00%	30.7	29.9	27.3	28.1	27.3	24.7
LTE B13	0	0	100.00%	31.2	30.4	27.9	28.7	27.9	24.2
LTE B14	0	0	100.00%	30.8	30.0	27.9	28.7	27.9	24.7
LTE B25/2	0	2	100.00%	31.4	30.6	23.8	24.6	24.4	24.7
LTE B26/5	0	0	100.00%	29.3	28.5	28.2	29.0	28.2	24.7
LTE B30	0	2	100.00%	29.5	28.7	24.7	25.6	24.8	23.2
LTE B41/B38 PC3**	0	2	63.30%	30.4	29.6	23.3	24.1	23.3	22.7
LTE B38(HPUE) PC2**	0	2	43.30%	30.4	29.6	23.3	24.1	23.3	22.9
LTE B48**	0	7	63.30%	29.7	28.9	20.8	21.6	20.8	22.7
LTE B66/4	0	2	100.00%	30.5	29.7	23.0	23.8	23.0	24.7
LTE B71	0	0	100.00%	30.8	30.0	27.7	28.5	27.7	24.7
5G FR1 n5	0	0	100.00%	30.6	29.8	28.4	29.2	28.4	24.0
5G FR1 n77 PC3**	0	7	33.00%	30.9	30.1	27.3	28.1	27.3	19.9
5G FR1 n78 PC3**	0	7	33.00%	28.5	27.7	24.1	24.9	24.1	19.2
5G FR1 n78(HPUE) PC2**	0	7	33.00%	28.5	27.7	24.1	24.9	24.1	20.7

Config 1

Band	Config	Antenna	TDD duty cycle	Head		Hotspot	Body-worn/Extremity		PMax*
				Standalone	Simultaneous	Simultaneous	Standalone	Simultaneous	
				DSI 2	DSI 7	DSI 6	DSI 4	DSI 8	
GSM850(GPRS 4 Tx slots)**	1	1	50.00%	26.1	25.3	29.3	30.1	29.3	24.2
GSM1900(GPRS 4 Tx slots)**	1	0	50.00%	29.2	28.4	26.8	27.6	26.8	22.7
WCDMA B2	1	0	100.00%	29.4	28.6	24.2	25.0	24.2	24.5
WCDMA B4	1	0	100.00%	26.2	25.4	24.0	24.8	24.0	24.5
WCDMA B5	1	1	100.00%	26.4	25.6	28.1	28.8	28.1	24.0
LTE B7	1	0	100.00%	31.9	31.1	24.7	25.5	24.7	24.5
LTE B12	1	1	100.00%	26.9	26.1	28.4	30.4	29.6	24.7
LTE B13	1	1	100.00%	26.0	25.2	28.5	29.3	28.5	24.0
LTE B14	1	1	100.00%	25.9	25.2	28.4	29.2	28.4	24.0
LTE B17	1	1	100.00%	25.6	24.8	28.3	29.1	28.3	24.0
LTE B25/2	1	0	100.00%	27.3	26.6	24.2	25.9	25.1	24.5
LTE B26/5	1	1	100.00%	25.3	24.5	27.9	28.6	27.9	24.0
LTE B30	1	0	100.00%	30.5	29.7	25.1	25.9	25.1	24.7
LTE B38 PC3**	1	0	63.30%	32.7	31.9	26.5	27.3	26.5	22.2
LTE B41 PC3**	1	0	63.30%	32.4	31.6	26.3	27.0	26.3	22.5
LTE B38(HPUE) PC2**	1	0	43.30%	32.7	31.9	28.0	28.9	28.1	22.1
LTE B48**	1	2	63.30%	34.9	34.1	21.1	21.9	21.1	22.7
LTE B66/4	1	0	100.00%	28.2	27.4	23.6	24.3	23.6	24.5
LTE B71	1	1	100.00%	26.8	26.0	29.6	30.4	29.6	24.0
5G FR1 n5	1	1	100.00%	25.8	25.0	28.5	29.3	28.5	24.0
5G FR1 n77 PC3**	1	2	33.00%	31.0	30.3	27.2	27.9	27.2	19.7
5G FR1 n78 PC3**	1	2	33.00%	34.3	33.5	21.5	22.3	21.5	19.7
5G FR1 n78(HPUE) PC2**	1	2	33.00%	34.3	33.5	21.5	22.3	21.5	20.2

*P_{max} is used for RF tune up procedure. The maximum allowed output power is equal to Pmax + 1dB uncertainty.

**All P_{limit} power levels entered in the Table correspond to average power levels after accounting for duty cycle in the case TDD modulation schemes (for e.g., GSM & LTE TDD & NR TDD).

The max allowed output power is the P_{limit} + 1dB device uncertainty, and if P_{limit} is higher than P_{max}, the device output power will be P_{max} instead.

4. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards, the below KDB standard may not including in the TAF code without accreditation.

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01
- FCC KDB 941225 D07 UMPC Mini Tablet v01r02

5. RF Exposure Limits

5.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

5.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

1. Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

6. Specific Absorption Rate (SAR)

6.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

6.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\mathbf{SAR} = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\mathbf{dm}}\right) = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\boldsymbol{\rho}\mathbf{dv}}\right)$$

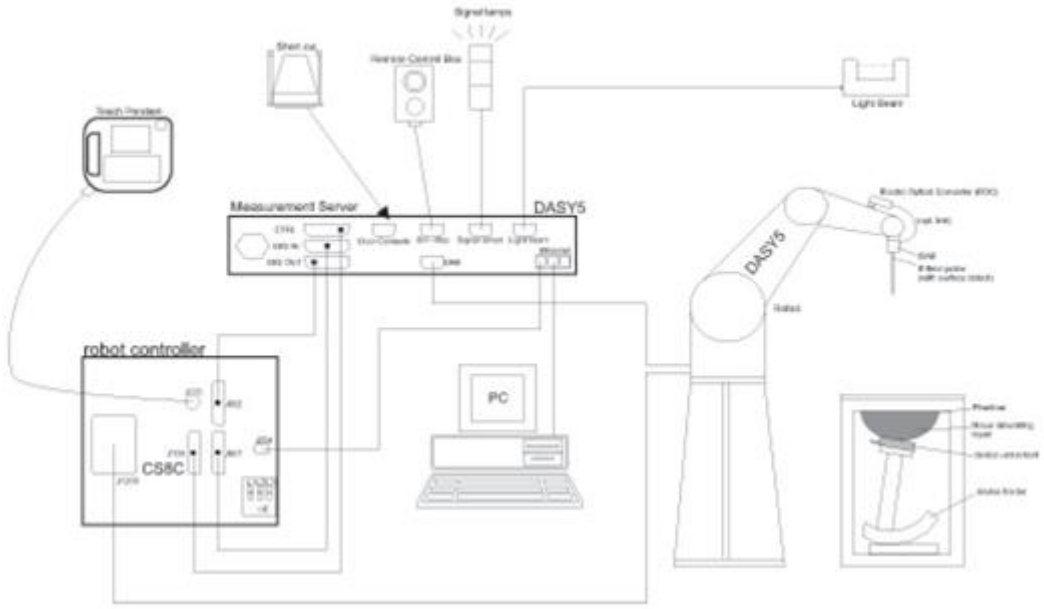
SAR is expressed in units of Watts per kilogram (W/kg)

$$\mathbf{SAR} = \frac{\boldsymbol{\sigma}|\mathbf{E}|^{\mathbf{2}}}{\boldsymbol{\rho}}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

7. System Description and Setup

The DASY system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

7.1 Test Site Location

The SAR measurement facilities used to collect data are within both Sporton Lab list below test site location are accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190 and 376) and the FCC designation No. TW1190 and TW3786 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC test.

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory		Sporton International Inc. Wensan Laboratory	
Test Site Location	TW1190 No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan		TW3786 No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan	
Test Site No.	SAR01-HY	SAR03-HY	SAR08-HY	SAR09-HY
	SAR04-HY	SAR05-HY	SAR11-HY	SAR12-HY
	SAR06-HY	SAR10-HY		

7.2 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG).The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

<ES3DV3 Probe>

Construction	Symmetric design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – 4 GHz; Linearity: ±0.2 dB (30 MHz – 4 GHz)	
Directivity	±0.2 dB in TSL (rotation around probe axis) ±0.3 dB in TSL (rotation normal to probe axis)	
Dynamic Range	5 µW/g – >100 mW/g; Linearity: ±0.2 dB	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 3.9 mm (body: 12 mm) Distance from probe tip to dipole centers: 3.0 mm	

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – >6 GHz Linearity: ±0.2 dB (30 MHz – 6 GHz)	
Directivity	±0.3 dB in TSL (rotation around probe axis) ±0.5 dB in TSL (rotation normal to probe axis)	
Dynamic Range	10 µW/g – >100 mW/g Linearity: ±0.2 dB (noise: typically <1 µW/g)	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

7.3 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

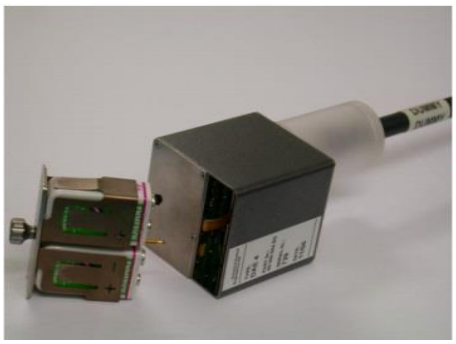
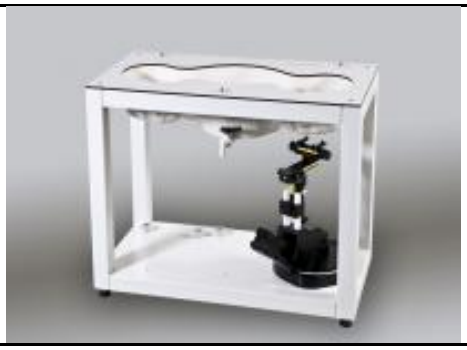


Fig 5.1 Photo of DAE

7.4 Phantom

<SAM Twin Phantom>

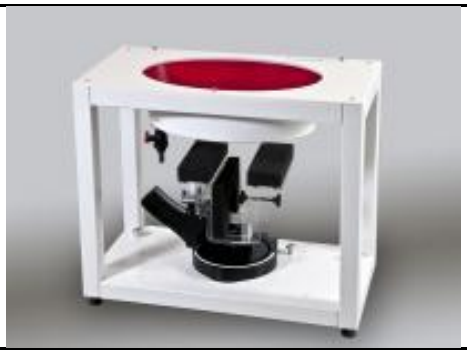
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

<ELI Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)
Filling Volume	Approx. 30 liters
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm



The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

7.5 Device Holder

<Mounting Device for Hand-Held Transmitter>

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat). And upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.

Mounting Device for Hand-Held Transmitters

Mounting Device Adaptor for Wide-Phones

<Mounting Device for Laptops and other Body-Worn Transmitters>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.

Mounting Device for Laptops

8. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

(a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
(b) Read the WWAN RF power level from the base station simulator.
(c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
(b) Place the EUT in the positions as Appendix D demonstrates.
(c) Set scan area, grid size and other setting on the DASY software.
(d) Measure SAR results for the highest power channel on each testing position.
(e) Find out the largest SAR result on these testing positions of each band
(f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

8.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

8.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

8.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

8.4 Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

8.5 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

8.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.

9. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit(2)	D750V3	1107	Mar. 08, 2019	Mar. 05, 2022
SPEAG	835MHz System Validation Kit(2)	D835V2	4d167	Nov. 25, 2019	Nov. 23, 2021
SPEAG	1750MHz System Validation Kit(2)	D1750V2	1112	Mar. 07, 2019	Mar. 05, 2021
SPEAG	1900MHz System Validation Kit(2)	D1900V2	5d041	Sep. 11, 2018	Sep. 08, 2021
SPEAG	2300MHz System Validation Kit(2)	D2300V2	1006	Jan. 28, 2019	Jan. 25, 2022
SPEAG	2450MHz System Validation Kit(2)	D2450V2	736	Aug. 31, 2018	Aug. 28, 2021
SPEAG	2600MHz System Validation Kit(2)	D2600V2	1078	Mar. 06, 2019	Mar. 04, 2021
SPEAG	3500MHz System Validation Kit(2)	D3500V2	1014	Jan. 29, 2019	Jan. 26, 2022
SPEAG	3700MHz System Validation Kit(2)	D3700V2	1006	Mar. 05, 2019	Mar. 03, 2021
SPEAG	3900MHz System Validation Kit(2)	D3900V2	1017	Apr. 29, 2019	Apr. 27, 2021
SPEAG	5GHz System Validation Kit(2)	D5GHzV2	1006	Sep. 27, 2018	Sep. 24, 2021
SPEAG	Data Acquisition Electronics	DAE3	495	Jul. 21, 2020	Jul. 20, 2021
SPEAG	Data Acquisition Electronics	DAE4	316	Jan. 19, 2021	Jan. 18, 2022
SPEAG	Data Acquisition Electronics	DAE4	376	Nov. 23, 2020	Nov. 22, 2021
SPEAG	Data Acquisition Electronics	DAE4	699	Feb. 26, 2020	Feb. 25, 2021
SPEAG	Data Acquisition Electronics	DAE4	778	Jun. 04, 2020	Jun. 03, 2021
SPEAG	Data Acquisition Electronics	DAE4	914	Jun. 22, 2020	Jun. 21, 2021
SPEAG	Data Acquisition Electronics	DAE4	1424	Jan. 24, 2020	Jan. 23, 2021
SPEAG	Dosimetric E-Field Probe	ES3DV3	3184	Sep. 23, 2020	Sep. 22, 2021
SPEAG	Dosimetric E-Field Probe	ES3DV3	3270	Sep. 23, 2020	Sep. 22, 2021
SPEAG	Dosimetric E-Field Probe	EX3DV4	3925	Sep. 24, 2020	Sep. 23, 2021
SPEAG	Dosimetric E-Field Probe	EX3DV4	3931	Oct. 22, 2020	Oct. 21, 2021
SPEAG	Dosimetric E-Field Probe	EX3DV4	7590	Apr. 14, 2020	Apr. 13, 2021
RCPTWN	Thermometer	HTC-1	TM685-1	Nov. 10, 2020	Nov. 09, 2021
RCPTWN	Thermometer	HTC-1	TM560-2	Nov. 10, 2020	Nov. 09, 2021
Anritsu	Radio Communication Analyzer	MT8821C	6201341950	Nov. 10, 2020	Nov. 09, 2021
Keysight	Wireless Communication Test Set	E5515C	MY50267236	Mar. 18, 2020	Mar. 17, 2021
R&S	BT Base Station	CBT	100815	Feb. 15, 2020	Feb. 14, 2021
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Anritsu	Signal Generator	MG3710A	6201502524	Nov. 11, 2020	Nov. 10, 2021
Keysight	ENA Network Analyzer	E5071C	MY46101588	Jun. 10, 2020	Jun. 09, 2021
SPEAG	Dielectric Probe Kit	DAK-3.5	1126	Sep. 16, 2020	Sep. 15, 2021
LINE SEIKI	Digital Thermometer	DTM3000-spezial	2942	Nov. 06, 2020	Nov. 05, 2021
Anritsu	Power Meter	ML2495A	1419002	Aug. 19, 2020	Aug. 18, 2021
Anritsu	Power Sensor	MA2411B	1911176	Aug. 18, 2020	Aug. 17, 2021
Anritsu	Power Meter	ML2495A	1804003	Oct. 21, 2020	Oct. 20, 2021
Anritsu	Power Sensor	MA2411B	1726150	Oct. 21, 2020	Oct. 20, 2021
Anritsu	Spectrum Analyzer	MS2830A	6201396378	Jun. 30, 2020	Jun. 29, 2021
Anritsu	Spectrum Analyzer	N9010A	MY53470118	Mar. 12, 2020	Mar. 11, 2021
Mini-Circuits	Power Amplifier	ZVE-8G+	6418	Oct. 21, 2020	Oct. 20, 2021
Mini-Circuits	Power Amplifier	ZVE-8G+	479102029	Aug. 26, 2020	Aug. 25, 2021
ATM	Dual Directional Coupler	C122H-10	P610410z-02	Note 1	
Woken	Attenuator 1	WK0602-XX	N/A	Note 1	
PE	Attenuator 2	PE7005-10	N/A	Note 1	
PE	Attenuator 3	PE7005- 3	N/A	Note 1	

General Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check source.
2. The dipole calibration interval can be extended to 3 years with justification according to KDB 865664 D01. The dipoles are also not physically damaged, or repaired during the interval. The justification data in appendix C can be found which the return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration for each dipole.

10. System Verification

10.1 Tissue Verification

The tissue dielectric parameters of tissue-equivalent media used for SAR measurements must be characterized within a temperature range of 18℃ to 25℃, measured with calibrated instruments and apparatuses, such as network analyzers and temperature probes. The temperature of the tissue-equivalent medium during SAR measurement must also be within 18℃ to 25℃ and within ± 2℃ of the temperature when the tissue parameters are characterized. The tissue dielectric measurement system must be calibrated before use. The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements.
The liquid tissue depth was at least 15cm in the phantom for all SAR testing

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	22.5	0.893	41.403	0.89	41.90	0.34	-1.19	±5	2020/12/31
750	22.9	0.907	41.719	0.89	41.90	1.91	-0.43	±5	2021/1/3
750	22.5	0.895	41.591	0.89	41.90	0.56	-0.74	±5	2021/1/6
750	22.8	0.870	43.260	0.89	41.90	-2.25	3.25	±5	2021/1/9
750	22.4	0.886	42.913	0.89	41.90	-0.45	2.42	±5	2021/1/21
750	22.6	0.884	42.852	0.89	41.90	-0.67	2.27	±5	2021/3/5
750	22.3	0.886	42.845	0.89	41.90	-0.45	2.26	±5	2021/3/10
835	22.5	0.889	41.214	0.90	41.50	-1.22	-0.69	±5	2020/12/29
835	22.5	0.929	42.411	0.90	41.50	3.22	2.20	±5	2020/12/31
835	22.9	0.916	42.307	0.90	41.50	1.78	1.94	±5	2021/1/3
835	22.7	0.933	42.684	0.90	41.50	3.67	2.85	±5	2021/1/7
835	22.2	0.916	43.138	0.90	41.50	1.78	3.95	±5	2021/1/8
835	22.6	0.925	42.184	0.90	41.50	2.78	1.65	±5	2021/1/19
835	22.4	0.911	41.732	0.90	41.50	1.22	0.56	±5	2021/1/21
835	22.6	0.871	41.233	0.90	41.50	-3.22	-0.64	±5	2021/3/5
1750	22.5	1.362	39.872	1.37	40.10	-0.58	-0.57	±5	2021/1/5
1750	22.7	1.347	40.032	1.37	40.10	-1.68	-0.17	±5	2021/1/7
1750	22.6	1.368	39.961	1.37	40.10	-0.15	-0.35	±5	2021/1/19
1750	22.4	1.337	39.037	1.37	40.10	-2.41	-2.65	±5	2021/1/30
1750	22.6	1.362	40.661	1.37	40.10	-0.58	1.40	±5	2021/3/5
1900	22.6	1.443	40.127	1.40	40.00	3.07	0.32	±5	2020/12/27
1900	22.4	1.425	39.552	1.40	40.00	1.79	-1.12	±5	2021/1/4
1900	22.5	1.419	40.657	1.40	40.00	1.36	1.64	±5	2021/1/5
1900	22.6	1.398	40.400	1.40	40.00	-0.14	1.00	±5	2021/1/19
1900	22.8	1.376	40.994	1.40	40.00	-1.71	2.49	±5	2021/3/8

Frequency (MHz)	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (εr)	Conductivity Target (σ)	Permittivity Target (εr)	Delta (σ) (%)	Delta (εr) (%)	Limit (%)	Date
2300	22.9	1.643	39.585	1.67	39.50	-1.62	0.22	±5	2020/12/27
2300	22.4	1.703	39.638	1.67	39.50	1.98	0.35	±5	2021/1/10
2300	22.4	1.681	40.602	1.67	39.50	0.66	2.79	±5	2021/1/21
2450	22.5	1.836	39.182	1.80	39.20	2.00	-0.05	±5	2021/1/22
2450	22.4	1.800	39.303	1.80	39.20	0.00	0.26	±5	2021/3/10
2600	22.6	1.997	38.889	1.96	39.00	1.89	-0.28	±5	2020/12/26
2600	22.5	1.907	39.104	1.96	39.00	-2.70	0.27	±5	2020/12/29
2600	22.7	1.993	37.817	1.96	39.00	1.68	-3.03	±5	2021/1/2
2600	22.4	2.050	38.424	1.96	39.00	4.59	-1.48	±5	2021/1/10
2600	22.3	2.005	37.886	1.96	39.00	2.30	-2.86	±5	2021/1/11
2600	22.7	1.925	38.879	1.96	39.00	-1.79	-0.31	±5	2021/1/18
2600	22.6	1.938	37.490	1.96	39.00	-1.12	-3.87	±5	2021/1/19
2600	22.8	1.998	38.944	1.96	39.00	1.94	-0.14	±5	2021/3/9
3500	22.3	2.922	38.255	2.91	37.90	0.41	0.94	±5	2021/1/10
3500	22.7	3.035	37.720	2.91	37.90	4.30	-0.47	±5	2021/1/18
3700	22.5	3.186	37.511	3.12	37.70	2.12	-0.50	±5	2020/12/28
3700	22.5	3.211	38.304	3.12	37.70	2.92	1.60	±5	2020/12/29
3700	22.3	3.132	38.053	3.12	37.70	0.38	0.94	±5	2021/1/10
3700	22.7	3.206	37.474	3.12	37.70	2.76	-0.60	±5	2021/1/18
3900	22.5	3.399	37.323	3.33	37.51	2.07	-0.50	±5	2020/12/28
3900	22.5	3.390	38.060	3.33	37.51	1.80	1.47	±5	2020/12/29
5250	22.8	4.635	37.061	4.71	35.95	-1.59	3.09	±5	2021/1/22
5250	22.3	4.677	37.460	4.71	35.95	-0.70	4.20	±5	2021/3/10
5600	22.8	5.009	36.526	5.07	35.50	-1.20	2.89	±5	2021/1/22
5600	22.3	5.038	36.958	5.07	35.50	-0.63	4.11	±5	2021/3/10
5750	22.8	5.155	36.350	5.22	35.35	-1.25	2.83	±5	2021/1/22
5750	22.3	5.197	36.781	5.22	35.35	-0.44	4.05	±5	2021/3/10

10.2 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Date	Frequency (MHz)	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2020/12/31	750	250	D750V3-1107	EX3DV4 - SN3925	DAE4 Sn778	2.04	8.32	8.16	-1.92	1.36	5.61	5.44	-3.03
2021/1/3	750	250	D750V3-1107	EX3DV4 - SN3931	DAE4 Sn699	1.99	8.32	7.96	-4.33	1.34	5.61	5.36	-4.46
2021/1/6	750	250	D750V3-1107	ES3DV3 - SN3184	DAE4 Sn1424	2.21	8.32	8.84	6.25	1.46	5.61	5.84	4.10
2021/1/9	750	250	D750V3-1107	ES3DV3 - SN3184	DAE4 Sn1424	2.15	8.32	8.6	3.37	1.42	5.61	5.68	1.25
2021/1/21	750	250	D750V3-1107	ES3DV3 - SN3184	DAE4 Sn914	2.11	8.32	8.44	1.44	1.42	5.61	5.68	1.25
2021/3/5	750	250	D750V3-1107	EX3DV4 - SN7590	DAE4 Sn376	2.10	8.32	8.4	0.96	1.36	5.61	5.44	-3.03
2021/3/10	750	50	D750V3-1107	EX3DV4 - SN3931	DAE4 Sn316	0.419	8.32	8.38	0.72	0.275	5.61	5.5	-1.96
2020/12/29	835	250	D835V2-4d167	ES3DV3 - SN3184	DAE4 Sn1424	2.45	9.55	9.8	2.62	1.62	6.21	6.48	4.35
2020/12/31	835	250	D835V2-4d167	EX3DV4 - SN3925	DAE4 Sn778	2.49	9.55	9.96	4.29	1.65	6.21	6.6	6.28
2021/1/3	835	250	D835V2-4d167	EX3DV4 - SN3931	DAE4 Sn699	2.38	9.55	9.52	-0.31	1.55	6.21	6.2	-0.16
2021/1/7	835	250	D835V2-4d167	ES3DV3 - SN3184	DAE4 Sn1424	2.23	9.55	8.92	-6.60	1.50	6.21	6	-3.38
2021/1/8	835	250	D835V2-4d167	ES3DV3 - SN3184	DAE4 Sn1424	2.19	9.55	8.76	-8.27	1.47	6.21	5.88	-5.31
2021/1/19	835	250	D835V2-4d167	ES3DV3 - SN3184	DAE4 Sn914	2.22	9.55	8.88	-7.02	1.50	6.21	6	-3.38
2021/1/21	835	250	D835V2-4d167	ES3DV3 - SN3184	DAE4 Sn914	2.21	9.55	8.84	-7.43	1.45	6.21	5.8	-6.60
2021/3/5	835	250	D835V2-4d167	EX3DV4 - SN7590	DAE4 Sn376	2.35	9.55	9.4	-1.57	1.54	6.21	6.16	-0.81
2021/1/5	1750	250	D1750V2-1112	ES3DV3 - SN3184	DAE4 Sn1424	8.65	36.70	34.6	-5.72	4.67	19.40	18.68	-3.71
2021/1/7	1750	250	D1750V2-1112	ES3DV3 - SN3184	DAE4 Sn1424	8.55	36.70	34.2	-6.81	4.55	19.40	18.2	-6.19
2021/1/19	1750	250	D1750V2-1112	ES3DV3 - SN3184	DAE4 Sn914	8.74	36.70	34.96	-4.74	4.65	19.40	18.6	-4.12
2021/1/30	1750	250	D1750V2-1112	ES3DV3 - SN3184	DAE4 Sn914	8.55	36.70	34.2	-6.81	4.55	19.40	18.2	-6.19
2021/3/5	1750	250	D1750V2-1112	EX3DV4 - SN7590	DAE4 Sn376	9.73	36.70	38.92	6.05	5.15	19.40	20.6	6.19
2020/12/27	1900	250	D1900V2-5d041	ES3DV3 - SN3270	DAE3 Sn495	9.77	40.20	39.08	-2.79	5.11	21.20	20.44	-3.58
2021/1/4	1900	250	D1900V2-5d041	EX3DV4 - SN3931	DAE4 Sn699	10.80	40.20	43.2	7.46	5.69	21.20	22.76	7.36
2021/1/5	1900	250	D1900V2-5d041	ES3DV3 - SN3184	DAE4 Sn1424	10.30	40.20	41.2	2.49	5.29	21.20	21.16	-0.19
2021/1/19	1900	250	D1900V2-5d041	ES3DV3 - SN3184	DAE4 Sn914	9.53	40.20	38.12	-5.17	5.08	21.20	20.32	-4.15
2021/3/8	1900	250	D1900V2-5d041	EX3DV4 - SN7590	DAE4 Sn376	9.3	40.20	37.2	-7.46	4.84	21.20	19.36	-8.68

Date	Frequency (MHz)	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2020/12/27	2300	250	D2300V2-1006	ES3DV3 - SN3184	DAE4 Sn1424	11.30	48.70	45.2	-7.19	5.41	23.20	21.64	-6.72
2021/1/10	2300	250	D2300V2-1006	ES3DV3 - SN3184	DAE4 Sn1424	11.70	48.70	46.8	-3.90	5.67	23.20	22.68	-2.24
2021/1/21	2300	250	D2300V2-1006	ES3DV3 - SN3184	DAE4 Sn914	11.60	48.70	46.4	-4.72	5.64	23.20	22.56	-2.76
2021/1/22	2450	250	D2450V2-736	EX3DV4 - SN3925	DAE4 Sn778	13.70	52.70	54.8	3.98	6.32	24.60	25.28	2.76
2021/3/10	2450	250	D2450V2-736	EX3DV4 - SN7590	DAE4 Sn376	12.9	52.70	51.6	-2.09	6.10	24.60	24.4	-0.81
2020/12/26	2600	250	D2600V2-1078	ES3DV3 - SN3270	DAE3 Sn495	14.30	57.60	57.2	-0.69	6.38	25.50	25.52	0.08
2020/12/29	2600	250	D2600V2-1078	ES3DV3 - SN3184	DAE4 Sn1424	14.40	57.60	57.6	0.00	6.70	25.50	26.8	5.10
2021/1/2	2600	50	D2600V2-1078	EX3DV4 - SN3925	DAE4 Sn778	2.97	57.60	59.4	3.13	1.37	25.50	27.4	7.45
2021/1/10	2600	250	D2600V2-1078	ES3DV3 - SN3184	DAE4 Sn1424	14.30	57.60	57.2	-0.69	6.76	25.50	27.04	6.04
2021/1/11	2600	250	D2600V2-1078	ES3DV3 - SN3184	DAE4 Sn1424	14.50	57.60	58	0.69	6.44	25.50	25.76	1.02
2021/1/18	2600	50	D2600V2-1078	EX3DV4 - SN3931	DAE4 Sn699	2.84	57.60	56.8	-1.39	1.32	25.50	26.4	3.53
2021/1/19	2600	250	D2600V2-1078	ES3DV3 - SN3184	DAE4 Sn914	14.80	57.60	59.2	2.78	6.86	25.50	27.44	7.61
2021/3/9	2600	250	D2600V2-1008	EX3DV4 - SN7590	DAE4 Sn376	15	56.40	60	6.38	6.71	25.30	26.84	6.09
2021/1/10	3500	100	D3500V2-1014	EX3DV4 - SN3925	DAE4 Sn778	6.59	67.90	65.9	-2.95	2.47	25.60	24.7	-3.52
2021/1/18	3500	50	D3500V2-1014	EX3DV4 - SN3931	DAE4 Sn699	3.63	67.90	72.6	6.92	1.37	25.60	27.4	7.03
2020/12/28	3700	50	D3700V2-1006	EX3DV4 - SN3931	DAE4 Sn699	3.41	67.30	68.2	1.34	1.25	24.50	25	2.04
2020/12/29	3700	50	D3700V2-1006	EX3DV4 - SN3931	DAE4 Sn699	3.44	67.30	68.8	2.23	1.26	24.50	25.2	2.86
2021/1/10	3700	50	D3700V2-1006	EX3DV4 - SN3925	DAE4 Sn778	3.30	67.30	66	-1.93	1.19	24.50	23.8	-2.86
2021/1/18	3700	50	D3700V2-1006	EX3DV4 - SN3931	DAE4 Sn699	3.43	67.30	68.6	1.93	1.26	24.50	25.2	2.86
2020/12/28	3900	100	D3900V2-1017-3900	EX3DV4 - SN3931	DAE4 Sn699	7.10	69.50	71	2.16	2.57	24.20	25.7	6.20
2020/12/29	3900	50	D3900V2-1017-3900	EX3DV4 - SN3931	DAE4 Sn699	3.14	69.50	62.8	-9.64	1.16	24.20	23.2	-4.13
2021/1/22	5250	50	D5GHzV2-1006-5250	EX3DV4 - SN3925	DAE4 Sn778	3.77	80.70	75.4	-6.57	1.08	23.20	21.6	-6.90
2021/3/10	5250	50	D5GHzV2-1006-5250	EX3DV4 - SN3931	DAE4 Sn316	3.86	80.70	77.2	-4.34	1.11	23.20	22.2	-4.31
2021/1/22	5600	100	D5GHzV2-1006-5600	EX3DV4 - SN3925	DAE4 Sn778	8.58	83.30	85.8	3.00	2.35	23.80	23.5	-1.26
2021/3/10	5600	50	D5GHzV2-1006-5600	EX3DV4 - SN3931	DAE4 Sn316	4.01	83.30	80.2	-3.72	1.13	23.80	22.6	-5.04
2021/1/22	5750	100	D5GHzV2-1006-5750	EX3DV4 - SN3925	DAE4 Sn778	7.85	80.40	78.5	-2.36	2.20	22.90	22	-3.93
2021/3/10	5750	50	D5GHzV2-1006-5750	EX3DV4 - SN3931	DAE4 Sn316	4.07	80.40	81.4	1.24	1.15	22.90	23	0.44

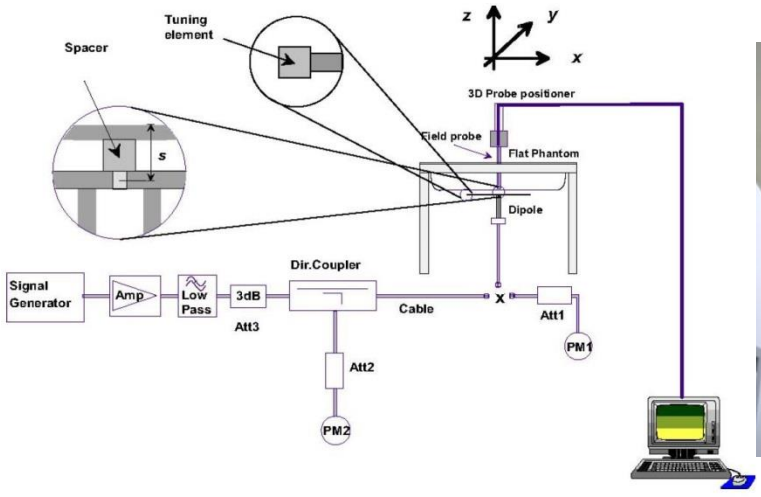


Fig 8.3.1 System Performance Check Setup

Fig 8.3.2 Setup Photo

11. RF Exposure Positions

11.1 Ear and handset reference point

Figure 9.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled “M,” the left ear reference point (ERP) is marked “LE,” and the right ERP is marked “RE.” Each ERP is 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Figure 9.1.2 The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Figure 9.1.3). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Figure 9.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

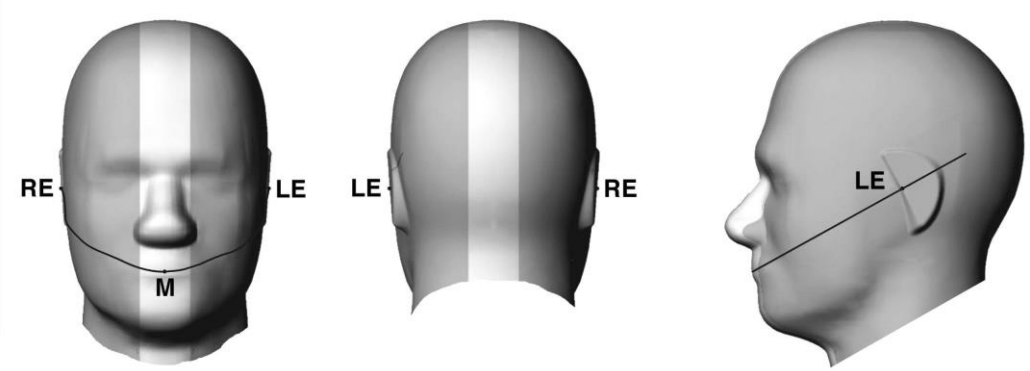


Fig 9.1.1 Front, back, and side views of SAM twin phantom

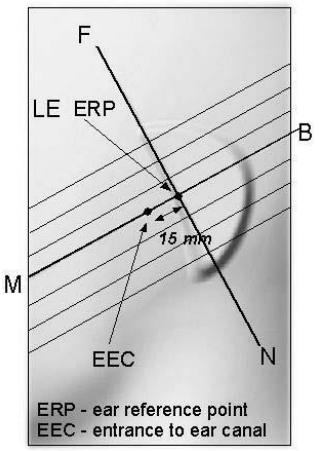


Fig 9.1.2 Close-up side view of phantom showing the ear region.

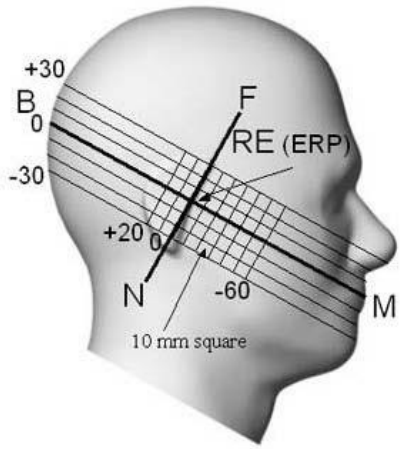


Fig 9.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

11.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width wt of the handset at the level of the acoustic output (point A in Figure 9.2.1 and Figure 9.2.2), and the midpoint of the width wb of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 9.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 9.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 9.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 9.2.3. The actual rotation angles should be documented in the test report.

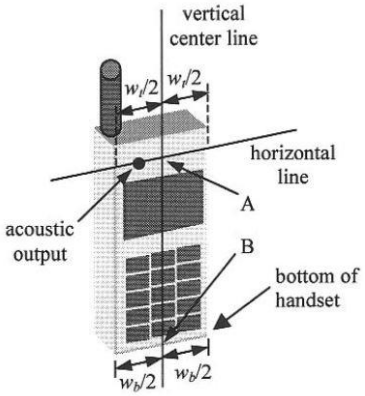


Fig 9.2.1 Handset vertical and horizontal reference lines—"fixed case

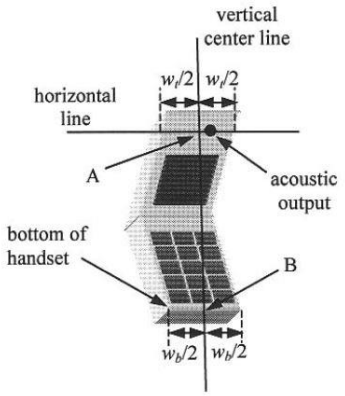


Fig 9.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

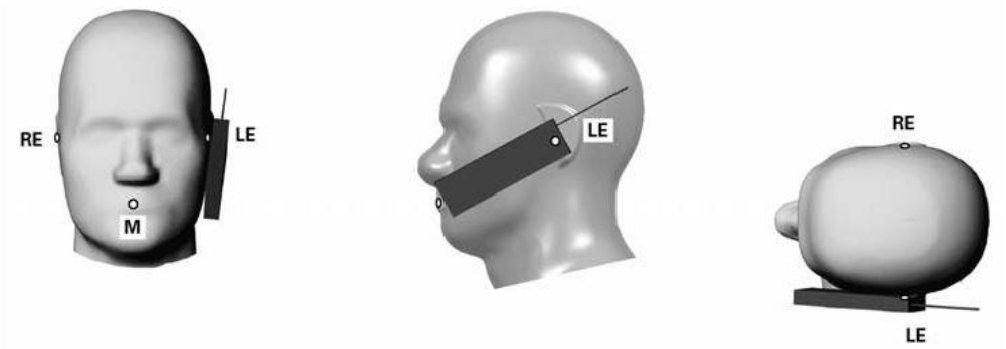


Fig 9.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

11.3 Definition of the tilt position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
3. Rotate the handset around the horizontal line by 15°.
4. While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. See Figure 9.3.1. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset should be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point

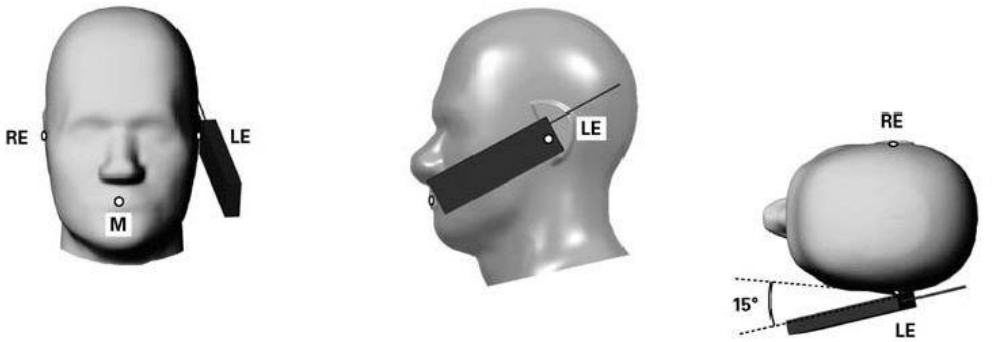


Fig 9.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

11.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 9.4). Per KDB648474 D04v01r03, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.

Accessories for body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-chip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

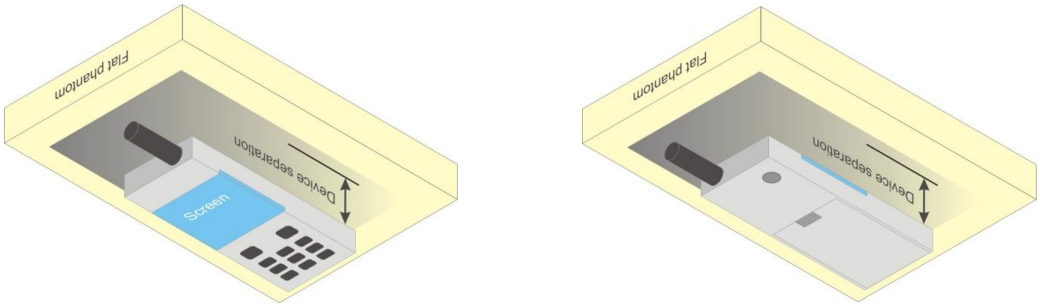


Fig 9.4 Body Worn Position

11.5 Product Specific Exposure

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets that support voice calls next to the ear, According to KDB648474 D04v01r03, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.

2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions.6 The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

11.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 publication procedures. The “Portable Hotspot” feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

12. Measurement procedure for output power and SAR

Power measurements for licensed transmitters are performed using a base station simulator under digital average power, and the detail output power measurement include in appendix D

<GSM Note>

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (4Tx slots) for GSM850/GSM1900 is considered as the primary mode.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode

<WCDMA Note>

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.
3. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
4. The procedures in KDB 941225 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
5. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set Gain Factors (β_c and β_d) and parameters were set according to each
   ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
   iii. Set RMC 12.2Kbps + HSDPA mode.
   iv. Set Cell Power = -86 dBm
   v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
   vi. Select HSDPA Uplink Parameters
   vii. Set Delta ACK, Delta NACK and Delta CQI = 8
   viii. Set Ack-Nack Repetition Factor to 3
   ix. Set CQI Feedback Cycle (k) to 4 ms
   x. Set CQI Repetition Factor to 2
   xi. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with β_{hs} = 30/15 * β_c, and Δ_{CQI} = 24/15 with β_{hs} = 24/15 * β_c.

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

Setup Configuration

HSUPA Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting * :
   i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
   ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
   iii. Set Cell Power = -86 dBm
   iv. Set Channel Type = 12.2k + HSPA
   v. Set UE Target Power
   vi. Power Ctrl Mode= Alternating bits
   vii. Set and observe the E-TFCI
   viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
d. The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed}1$: 47/15 $\beta_{ed}2$: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c. For sub-test 5, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 5/15 with β_{hs} = 5/15 * β_c.

Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.

Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration below
b. The RF path losses were compensated into the measurements.
c. A call was established between EUT and Base Station with following setting:
   i. Set RMC 12.2Kbps + HSDPA mode.
   ii. Set Cell Power = -25 dBm
   iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
   iv. Select HSDPA Uplink Parameters
   v. Set Gain Factors (β_c and β_d) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
      a). Subtest 1: β_c/β_d=2/15
      b). Subtest 2: β_c/β_d=12/15
      c). Subtest 3: β_c/β_d=15/8
      d). Subtest 4: β_c/β_d=15/4
   vi. Set Delta ACK, Delta NACK and Delta CQI = 8
   vii. Set Ack-Nack Repetition Factor to 3
   viii. Set CQI Feedback Cycle (k) to 4 ms
   ix. Set CQI Repetition Factor to 2
   x. Power Ctrl Mode = All Up bits
d. The transmitted maximum output power was recorded.

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
A summary of these settings are illustrated below:

C.8.1.12 Fixed Reference Channel Definition H-Set 12

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Proces ses	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.		
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

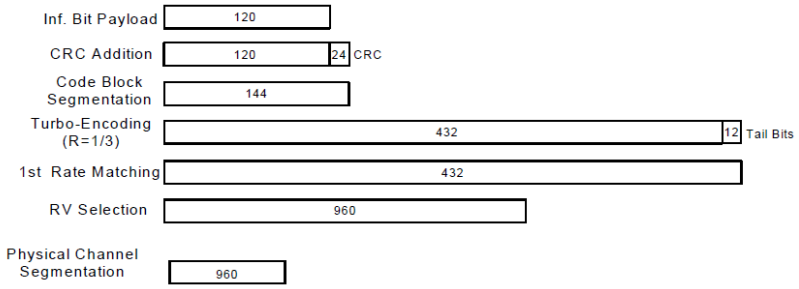
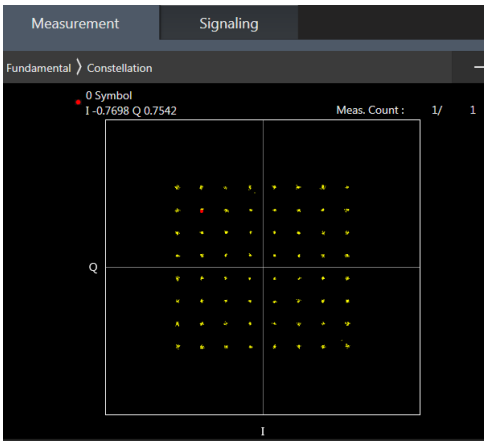


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration

<LTE Note>

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4/B5/B12/B17/B26/B38/B71 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE band 2/4/5/17/38 SAR test was covered by Band 25/66/26/12/41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
   b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
10. According to 2017 TCB workshop, for 64 QAM and 16 QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



64QAM

16QAM

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

SAR was tested with a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by 3GPP.

a. 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations
b. "special subframe S" contains both uplink and downlink transmissions, it has been taken into consideration to determine the transmission duty factor according to the worst case uplink and downlink cyclic prefix requirements for UpPTS
c. Establishing connections with base station simulators ensure a consistent means for testing SAR and recommended for evaluating SAR. The Anritsu MT8820C (firmware: #22.52#004) was used for LTE output power measurements and SAR testing.

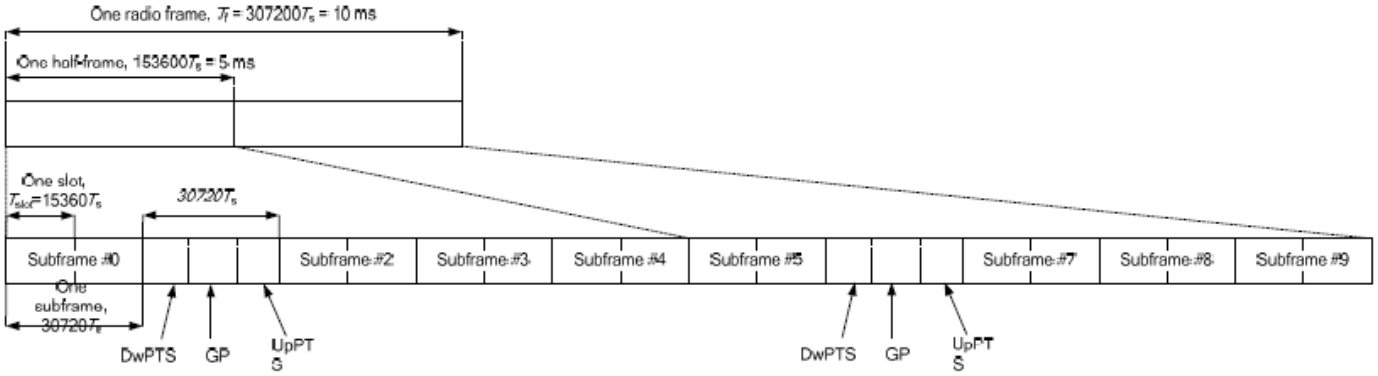


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Special subframe (30720·T_s): Normal cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	**Normal cyclic prefix in uplink**	**Extended cyclic prefix in uplink**
Uplink duty factor in one special subframe	**0~4**	7.13%	8.33%
	5~9	14.3%	16.7%

Special subframe(30720·T_s): Extended cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	**Normal cyclic prefix in uplink**	**Extended cyclic prefix in uplink**
Uplink duty factor in one special subframe	**0~3**	7.13%	8.33%
	4~7	14.3%	16.7%

The highest duty factor is resulted from:

i. Uplink-downlink configuration: 0. In a half-frame consisted of 5 subfames, uplink operation is in 3 uplink subframes and 1 special subframe.

ii. special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink

iii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.167)/5 = 63.3%

iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.143)/5 = 62.9%

v. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.

vi. The device supports Power Class 3 uplink-downlink configurations 0 and 6, and Power Class 2 uplink-downlink configurations 1 to 5 operations for LTE Band 41.

vii. The highest available duty cycle for Power Class 2 operation is 43.3% using UL-DL configuration 1, for Power Class 3 operation is 63.3% using UL-DL configuration 0. Per FCC Guidance, all SAR tests were performed using Power Class 3. SAR with Power Class 2 at the available duty factor was additionally performed for the Power Class 3 configuration with the highest SAR among all exposure condition.

<5G FR1 Note>

1. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
   a. For DFT-OFDM output power measurement reduction, full measurement on Pi/2 BPSK and QPSK, for16QAM/64QMA/256QAM spot check 1RB 1offset configuration to ensure the output power will not ½ dB higher than Pi/2 BPSK and QPSK, for smaller bandwidth output power will spot check 1RB 1offset configuration at Pi/2 BPSK to ensure output power will not ½ dB higher than largest supported bandwidth.
   b. The high order modulations for CP-OFDM maximum power according to tune-up document will not ½ dB higher than DFT-OFDM mode, also DFT-OFDM mode reported SAR is ≤ 1.45 W/kg for this device, for CP-OFDM mode output power and SAR measurement is not necessary.
   c. SAR testing start with the largest channel bandwidth and measure SAR for PI/2 BPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
   d. 50% RB allocation for PI/2 BPSK SAR testing follows 1RB PI/2 BPSK allocation procedure
   e. PI/2 BPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
   f. QPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in PI/2 BPSK, also reported SAR for the PI/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
   g. Smaller bandwidth output power for each RB allocation configuration for this device will not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
2. SAR testing for NR FDD was performed using Factory Test Mode software to establish the connection and perform SAR with 100% transmission.
3. SAR testing for NR TDD was performed using Factory Test Mode software to establish the connection, according to manufacturer definition for TDD actual transmission cycle is 33%, but factory test mode software is set and perform SAR with 25%, therefore, the SAR test result will be scaled up to 33%

<3GPP 38.101 MPR for EN-DC>

Table 6.2.2-1 Maximum power reduction (MPR) for power class 3

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM	Pi/2 BPSK	≤ 3.5[1]	≤ 1.2[1]	≤ 0.2[1]
		≤ 0.5[2]	≤ 0.5[2]	0[2]
	QPSK	≤ 1		0
	16 QAM	≤ 2		≤ 1
	64 QAM	≤ 2.5		
	256 QAM	≤ 4.5		
CP-OFDM	QPSK	≤ 3		≤ 1.5
	16 QAM	≤ 3		≤ 2
	64 QAM	≤ 3.5		
	256 QAM	≤ 6.5		

NOTE 1: Applicable for UE operating in TDD mode with Pi/2 BPSK modulation and UE indicates support for UE capability *powerBoosting-pi2BPSK* and if the IE *powerBoostPi2BPSK* is set to 1 and 40 % or less slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79. The reference power of 0 dB MPR is 26 dBm.

NOTE 2: Applicable for UE operating in FDD mode, or in TDD mode in bands other than n40, n41, n77, n78 and n79 with Pi/2 BPSK modulation and if the IE *powerBoostPi2BPSK* is set to 0 and if more than 40 % of slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79.

Table 6.2.2-2 Maximum power reduction (MPR) for power class 2

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM	Pi/2 BPSK	≤ 3.5	≤ 0.5	0
	QPSK	≤ 3.5	≤ 1	0
	16 QAM	≤ 3.5	≤ 2	≤ 1
	64 QAM	≤ 3.5	≤ 2.5	
	256 QAM	≤ 4.5		
CP-OFDM	QPSK	≤ 3.5	≤ 3	≤ 1.5
	16 QAM	≤ 3.5	≤ 3	≤ 2
	64 QAM	≤ 3.5		
	256 QAM	≤ 6.5		

<WLAN Note>

1. The WLAN output power include in appendix D was used for SAR testing.
2. The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures. For “Not required”, SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band or when MIMO mode was not performed, due to for each antenna, transmit power in SISO operation is larger than (or equal to) the power in MIMO operation, RF exposure compliance of MIMO mode can be deduced from the compliance simultaneous transmission of antennas operating in SISO mode. Additional output power measurements were not necessary.
3. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
4. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
5. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
6. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
   a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
   b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
   c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

<Bluetooth>

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps due to its highest average power and duty cycle is 77.07considered in SAR testing, and the duty cycle would be scaled to theoretical 83.3% in reported SAR calculation, for the duty cycle figure and output power include in appendix D.

13. DL/UL carrier aggregation

<LTE Carrier Aggregation combinations>

General Note:

1. This device supports Carrier Aggregation on downlink only for inter and intra band, Uplink CA is not supported. For the device supports combination bands and configurations are according to 3GPP.
2. In applying the existing power measurement procedure of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of the frequency band and CCs in each row need consideration, and that configurations require power measurement should be highlighted in the below table.

2CC Downlink Carrier Aggregation				3CC Downlink Carrier Aggregation				4CC Downlink Carrier Aggregation			
Number	Combination	Restriction	Covered by Measurement Superset	Number	Combination	Restriction	Covered by Measurement Superset	Number	Combination	Restriction	Covered by Measurement Superset
1	CA_2A-12A		3CC-1	1	CA_2A-12A-12A		4CC-1	1	CA_2A-12A-66A-66A		
2	CA_2A-13A		3CC-6	2	CA_2A-12A-30A		4CC-9	2	CA_2A-12A-66C		4CC-1
3	CA_2A-14A		3CC-8	3	CA_2A-12A-66A		4CC-2	3	CA_2A-13A-46C	B46 SCC Only	
4	CA_2A-17A			4	CA_2A-12B		4CC-1	4	CA_2A-13A-48C		
5	CA_2A-29A	B29 SCC Only	3CC-15	5	CA_2A-13A-46A	B46 SCC Only	4CC-3	5	CA_2A-13A-66A-66A		
6	CA_2A-2A		3CC-15	6	CA_2A-13A-48A		4CC-4	6	CA_2A-13A-66B		4CC-5
7	CA_2A-30A		3CC-10	7	CA_2A-13A-66A		4CC-5	7	CA_2A-13A-66C		4CC-5
8	CA_2A-46A	B46 SCC Only	3CC-41	8	CA_2A-14A-30A			8	CA_2A-14A-66A-66A		
9	CA_2A-48A		3CC-42	9	CA_2A-14A-66A		4CC-8	9	CA_2A-2A-12A-30A		
10	CA_2A-4A		3CC-34	10	CA_2A-29A-30A	B29 SCC Only	4CC-14	10	CA_2A-2A-12A-66A		4CC-1
11	CA_2A-5A		3CC-39	11	CA_2A-29A-66A	B29 SCC Only		11	CA_2A-2A-12B		4CC-9
12	CA_2A-66A		3CC-45	12	CA_2A-2A-12A		4CC-9	12	CA_2A-2A-13A-66A		4CC-5
13	CA_2A-71A		3CC-37	13	CA_2A-2A-13A		4CC-3	13	CA_2A-2A-14A-66A		4CC-8
14	CA_2A-7A		3CC-39	14	CA_2A-2A-14A		4CC-8	14	CA_2A-2A-29A-30A	B29 SCC Only	4CC-58
15	CA_2C		3CC-53	15	CA_2A-2A-29A	B29 SCC Only	4CC-14	15	CA_2A-2A-30A-66A		
16	CA_4A-12A		3CC-31	16	CA_2A-2A-30A		4CC-15	16	CA_2A-2A-46C	B46 SCC Only	4CC-133
17	CA_4A-13A		3CC-32	17	CA_2A-2A-46A	B46 SCC Only	4CC-16	17	CA_2A-2A-4A-12A		
18	CA_4A-17A			18	CA_2A-2A-4A		4CC-18	18	CA_2A-2A-4A-4A		4CC-19
19	CA_4A-29A	B29 SCC Only	3CC-33	19	CA_2A-2A-5A		4CC-20	19	CA_2A-2A-4A-5A		
20	CA_4A-30A		3CC-34	20	CA_2A-2A-7A		4CC-23	20	CA_2A-2A-5A-30A		
21	CA_4A-46A	B46 SCC Only	3CC-136	21	CA_2A-2A-66A		4CC-27	21	CA_2A-2A-5A-66A		
22	CA_4A-48A		3CC-138	22	CA_2A-2A-71A		4CC-25	22	CA_2A-2A-5B		4CC-19
23	CA_4A-4A		3CC-35	23	CA_2A-30A-66A		4CC-28	23	CA_2A-2A-7A-66A		
24	CA_4A-5A		3CC-36	24	CA_2A-46A-46A	B46 SCC Only	4CC-29	24	CA_2A-2A-66A-66A		4CC-21
25	CA_4A-71A		3CC-37	25	CA_2A-46A-48A	B46 SCC Only	4CC-49	25	CA_2A-2A-66A-71A		
26	CA_4A-7A		3CC-38	26	CA_2A-46A-66A	B46 SCC Only	4CC-30	26	CA_2A-2A-66B		4CC-21
27	CA_5A-5A		3CC-58	27	CA_2A-46C	B46 SCC Only	4CC-31	27	CA_2A-2A-66C		4CC-21
28	CA_5A-25A			28	CA_2A-48A-48A		4CC-34	28	CA_2A-30A-66A-66A		
29	CA_5A-30A		3CC-71	29	CA_2A-48A-66A		4CC-33	29	CA_2A-46A-46C	B46 SCC Only	4CC-30
30	CA_5A-38A			30	CA_2A-48C		4CC-33	30	CA_2A-46C-66A	B46 SCC Only	
31	CA_5A-41A			31	CA_2A-4A-12A		4CC-17	31	CA_2A-46D	B46 SCC Only	4CC-30
32	CA_5A-46A	B46 SCC Only	3CC-41	32	CA_2A-4A-13A			32	CA_2A-48A-48C		4CC-33
33	CA_5A-48A		3CC-42	33	CA_2A-4A-29A	B29 SCC Only		33	CA_2A-48C-66A		
34	CA_5A-66A		3CC-43	34	CA_2A-4A-30A			34	CA_2A-48D		4CC-133
35	CA_5A-7A		3CC-39	35	CA_2A-4A-4A		4CC-18	35	CA_2A-4A-12B		4CC-36
36	CA_5B		3CC-44	36	CA_2A-4A-5A		4CC-19	36	CA_2A-4A-4A-12A		
37	CA_7A-12A		3CC-49	37	CA_2A-4A-71A		4CC-125	37	CA_2A-4A-4A-5A		4CC-19
38	CA_7A-46A	B46 SCC Only	3CC-68	38	CA_2A-4A-7A		4CC-39	38	CA_2A-4A-5B		4CC-19
39	CA_7A-66A		3CC-129	39	CA_2A-5A-7A			39	CA_2A-4A-7A-7A		
40	CA_7A-7A		3CC-78	40	CA_2A-5A-30A		4CC-20	40	CA_2A-4A-7C		4CC-39
41	CA_7B		3CC-52	41	CA_2A-5A-46A	B46 SCC Only	4CC-41	41	CA_2A-5A-46C	B46 SCC Only	
42	CA_7C		3CC-52	42	CA_2A-5A-48A		4CC-42	42	CA_2A-5A-48C		
43	CA_12A-12A		3CC-1	43	CA_2A-5A-66A		4CC-21	43	CA_2A-5A-66A-66A		4CC-59

44	CA_12A-25A			44	CA_2A-5B		4CC-19	44	CA_2A-5A-66B		4CC-59
45	CA_12A-30A		3CC-2	45	CA_2A-66A-66A		4CC-1	45	CA_2A-5A-66C		4CC-59
46	CA_12A-46A	B46 SCC Only	3CC-82	46	CA_2A-66A-71A		4CC-25	46	CA_2A-5B-30A		4CC-21
47	CA_12A-66A		3CC-83	47	CA_2A-66B		4CC-1	47	CA_2A-5B-66A		4CC-59
48	CA_12B		3CC-82	48	CA_2A-66C		4CC-1	48	CA_2A-66A-66A-66A		4CC-59
49	CA_13A-46A	B46 SCC Only	3CC-85	49	CA_2A-7A-12A		4CC-55	49	CA_2A-46A-48C	B46 SCC Only	
50	CA_13A-48A		3CC-87	50	CA_2A-7A-66A		4CC-56	50	CA_2A-66A-66A-71A		
51	CA_13A-66A		3CC-90	51	CA_2A-7A-7A		4CC-55	51	CA_2A-66A-66B		4CC-59
52	CA_14A-30A		3CC-93	52	CA_2A-7C		4CC-55	52	CA_2A-66A-66C		4CC-59
53	CA_14A-66A		3CC-93	53	CA_2C-12A		4CC-55	53	CA_2A-66C-71A		
54	CA_25A-25A		3CC-95	54	CA_2C-29A	B29 SCC Only	4CC-14	54	CA_2A-66D		4CC-59
55	CA_25A-26A		3CC-96	55	CA_2C-30A		4CC-9	55	CA_2A-7A-12B		
56	CA_25A-41A		3CC-98	56	CA_2C-5A		4CC-20	56	CA_2A-7A-66A-66A		4CC-23
57	CA_25A-46A	B46 SCC Only		57	CA_2C-66A		4CC-21	57	CA_2C-12A-30A		4CC-9
58	CA_26A-41A		3CC-99	58	CA_5A-5A-66A		4CC-43	58	CA_2C-29A-30A	B29 SCC Only	
59	CA_26A-46A	B46 SCC Only		59	CA_5A-30A-66A		4CC-70	59	CA_2C-5A-66A		4CC-21
60	CA_29A-30A	B29 SCC Only	3CC-100	60	CA_5A-46A-66A	B46 SCC Only	4CC-71	60	CA_2C-66A-66A		4CC-59
61	CA_29A-66A	B29 SCC Only	3CC-101	61	CA_5A-46C	B46 SCC Only	4CC-71	61	CA_4A-46A-46C	B46 SCC Only	
62	CA_30A-66A		3CC-102	62	CA_5A-48A-48A		4CC-74	62	CA_4A-46D	B46 SCC Only	4CC-61
63	CA_38C			63	CA_5A-48A-66A		4CC-74	63	CA_4A-48D		
64	CA_41A-41A		3CC-104	64	CA_5A-48C		4CC-74	64	CA_4A-4A-12A-30A		
65	CA_41C		3CC-104	65	CA_5A-66A-66A		4CC-74	65	CA_4A-4A-12B		4CC-64
66	CA_48A-48A		3CC-116	66	CA_5A-66B		4CC-74	66	CA_4A-4A-29A-30A	B29 SCC Only	
67	CA_48A-66A		3CC-131	67	CA_5A-66C		4CC-74	67	CA_4A-4A-5A-30A		
68	CA_48C		3CC-116	68	CA_5A-7A-46A	B46 SCC Only		68	CA_4A-4A-5B		4CC-67
69	CA_66A-66A		3CC-45	69	CA_5A-7A-7A		4CC-130	69	CA_4A-5B-30A		4CC-67
70	CA_66A-71A		3CC-46	70	CA_5A-7C		4CC-130	70	CA_5A-30A-66A-66A		
71	CA_66B		3CC-47	71	CA_5B-30A		4CC-20	71	CA_5A-46C-66A	B46 SCC Only	
72	CA_66C		3CC-48	72	CA_5B-46A	B46 SCC Only	4CC-41	72	CA_5A-46D	B46 SCC Only	4CC-71
73	CA_7A-13A		3CC-123	73	CA_5B-66A		4CC-47	73	CA_5A-48A-48C		4CC-74
74	CA_7A-26A		3CC-127	74	CA_7A-12A-66A			74	CA_5A-48C-66A		
75	CA_7A-29A	B29 SCC Only	3CC-124	75	CA_7A-12B		4CC-55	75	CA_5A-48D		4CC-74
76	CA_46A-66A	B46 SCC Only	3CC-26	76	CA_7A-46C	B46 SCC Only	4CC-129	76	CA_5A-5A-66A-66A		4CC-70
77	CA_46A-71A	B46 SCC Only	3CC-108	77	CA_7A-66A-66A		4CC-130	77	CA_5A-5A-66B		4CC-70
				78	CA_7A-7A-46A	B46 SCC Only	4CC-129	78	CA_5A-5A-66C		4CC-70
				79	CA_7C-46A	B46 SCC Only	4CC-129	79	CA_5A-66A-66B		4CC-70
				80	CA_12B-66A		4CC-137	80	CA_5A-66A-66C		4CC-70
				81	CA_12A-30A-66A		4CC-15	81	CA_5A-66D		4CC-70
				82	CA_12A-46C	B46 SCC Only	4CC-88	82	CA_5B-30A-66A		4CC-70
				83	CA_12A-66A-66A		4CC-89	83	CA_5B-66A-66A		4CC-70
				84	CA_12A-66C		4CC-89	84	CA_5B-46C	B46 SCC Only	
				85	CA_13A-46A-66A	B46 SCC Only	4CC-90	85	CA_5B-66B		4CC-70
				86	CA_13A-46C	B46 SCC Only	4CC-90	86	CA_5B-66C		4CC-70
				87	CA_13A-48A-48A		4CC-94	87	CA_12A-30A-66A-66A		
				88	CA_13A-48A-66A		4CC-94	88	CA_12A-46D	B46 SCC Only	
				89	CA_13A-48C		4CC-94	89	CA_12B-66A-66A		4CC-87
				90	CA_13A-66A-66A		4CC-92	90	CA_13A-46C-66A	B46 SCC Only	
				91	CA_13A-66B		4CC-93	91	CA_13A-46D	B46 SCC Only	4CC90
				92	CA_13A-66C		4CC-94	92	CA_13A-66A-66C		4CC-96
				93	CA_14A-30A-66A		4CC-101	93	CA_13A-48A-66B		4CC-96
				94	CA_14A-66A-66A		4CC-101	94	CA_13A-48A-66C		4CC-96
				95	CA_25A-25A-25A		4CC-102	95	CA_13A-48A-48C		4CC-96
				96	CA_25A-25A-26A			96	CA_13A-48C-66A		
				97	CA_25A-25A-41A		4CC-102	97	CA_13A-48D		4CC-96
				98	CA_25A-41C		4CC-102	98	CA_13A-66A-66A-66A		4CC-100
				99	CA_26A-41C			99	CA_13A-66A-66B		4CC-100

				100	CA_29A-30A-66A	B29 SCC Only	4CC-104	100	CA_13A-66D		4CC-5
				101	CA_29A-66A-66A	B29 SCC Only	4CC-104	101	CA_14A-30A-66A-66A		
				102	CA_30A-66A-66A		4CC-104	102	CA_25A-25A-41C		4CC-103
				103	CA_41A-41C		4CC-105	103	CA_25A-41D		
				104	CA_41D		4CC-105	104	CA_29A-30A-66A-66A	B29 SCC Only	
				105	CA_46A-46A-66A	B46 SCC Only	4CC-109	105	CA_41A-41A-41C		4CC-103
				106	CA_46A-66A-66A	B46 SCC Only	4CC-109	106	CA_41A-41D		4CC-103
				107	CA_46C-66A	B46 SCC Only	4CC-109	107	CA_41C-41C		4CC-103
				108	CA_46C-71A	B46 SCC Only		108	CA_41E		4CC-103
				109	CA_46A-66C	B46 SCC Only	4CC-110	109	CA_46A-46C-66A	B46 SCC Only	4CC-30
				110	CA_48A-48A-66A		4CC-116	110	CA_46A-66A-66A-66A	B46 SCC Only	4CC-30
				111	CA_48A-48C		4CC-116	111	CA_46C-66A-66A	B46 SCC Only	4CC-30
				112	CA_48A-66A-66A		4CC-116	112	CA_46D-66A	B46 SCC Only	4CC-30
				113	CA_48A-66B		4CC-116	113	CA_48A-48A-66A-66A		4CC-33
				114	CA_48A-66C		4CC-116	114	CA_48A-66A-66A-66A		4CC-33
				115	CA_48C-66A		4CC-116	115	CA_48C-66B		4CC-33
				116	CA_48D		4CC-116	116	CA_48C-66C		4CC-33
				117	CA_66A-66A-66A		4CC-116	117	CA_48A-48A-66B		4CC-33
				118	CA_66A-66A-71A		4CC-25	118	CA_48A-48A-66C		4CC-33
				119	CA_66A-66B		4CC-52	119	CA_48A-48C-66A		4CC-33
				120	CA_66A-66C		4CC-52	120	CA_48A-48D		4CC-49
				121	CA_66C-71A		4CC-25	121	CA_48C-48C		4CC-49
				122	CA_66D		4CC-52	122	CA_48C-66A-66A		4CC-33
				123	CA_2A-7A-13A		4CC-128	123	CA_48D-66A		4CC-33
				124	CA_2A-7A-29A	B29 SCC Only	4CC-126	124	CA_48E		4CC-49
				125	CA_2A-7A-46A	B46 SCC Only	4CC-129	125	CA_2A-2A-4A-71A		
				126	CA_5A-7A-66A		4CC-130	126	CA_2A-7A-7A-29A	B29 SCC Only	
				127	CA_7A-7A-26A			127	CA_2A-7A-7A-66A		4CC-23
				128	CA_7A-7A-66A		4CC-127	128	CA_2A-7A-7A-13A		
				129	CA_7C-66A		4CC-127	129	CA_2A-7A-46C	B46 SCC Only	
				130	CA_7C-13A		4CC-128	130	CA_5A-7A-66A-66A		
				131	CA_46A-48A-66A	B46 SCC Only	4CC-132	131	CA_7A-7A-66A-66A		4CC-137
				132	CA_4A-12A-12A		4CC-36	132	CA_46C-48A-66A	B46 SCC Only	4CC-134
				133	CA_4A-12A-30A		4CC-64	133	CA_2A-46C-48A	B46 SCC Only	
				134	CA_4A-12B		4CC-64	134	CA_46A-48C-66A	B46 SCC Only	
				135	CA_4A-29A-30A	B29 SCC Only	4CC-66	135	CA_2A-7C-29A	B29 SCC Only	4CC-126
				136	CA_4A-46A-46A	B46 SCC Only	4CC-62	136	CA_5A-7C-66A		4CC-130
				137	CA_4A-46C	B46 SCC Only	4CC-62	137	CA_7A-12B-66A		4CC-1
				138	CA_4A-48C		4CC-63	138	CA_7A-46D	B46 SCC Only	4CC-129
				139	CA_4A-4A-12A		4CC-64	139	CA_7A-7A-46C	B46 SCC Only	4CC-129
				140	CA_4A-4A-13A		3CC-32	140	CA_7C-66A-66A		4CC-137
				141	CA_4A-4A-29A	B29 SCC Only	4CC-66	141	CA_7C-46C	B46 SCC Only	4CC-129
				142	CA_4A-4A-30A		4CC-66				
				143	CA_4A-4A-5A		4CC-19				
				144	CA_4A-4A-71A		4CC-125				
				145	CA_4A-4A-7A		4CC-39				
				146	CA_4A-5A-30A		4CC-67				
				147	CA_4A-5B		4CC-67				
				148	CA_4A-7A-12A						
				149	CA_4A-7A-7A		3CC-149				
				150	CA_4A-7C		3CC-149				

<Power verification when LTE Carrier Aggregation Active>

General Note:

i. According to KDB941225 D05A v01r02, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.

ii. Uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.

iii. The device supports downlink two carrier aggregation. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.

iv. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.

v. For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.

vi. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

$$\text{Nominal channel spacing} = \left\lfloor \frac{BW_{Channel(1)} + BW_{Channel(2)} - 0.1\left|BW_{Channel(1)} - BW_{Channel(2)}\right|}{0.6} \right\rfloor 0.3 \ \text{[MHz]}$$

<Two Carrier power verification>

Configure		CA Configuration (BCS)	PCC							SCC				Power	
			LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band		CA_2A-17A	2	5	1907.5	19175	QPSK	1	0	17	10	740	5790	24.35	24.39
		CA_4A-17A	4	5	1732.5	20175	QPSK	1	0	17	10	740	5790	24.56	24.58
		CA_5A-25A	5	10	829	20450	QPSK	1	0	25	20	1960	8340	24.26	24.27
		CA_5A-38A	5	10	829	20450	QPSK	1	0	38	20	2595	38000	24.25	24.27
		CA_5A-41A	5	10	829	20450	QPSK	1	0	41	20	2593	40620	24.23	24.27
		CA_12A-25A	12	10	704	23060	QPSK	1	49	25	20	1960	8340	24.33	24.39
		CA_25A-46A	25	20	1905	26590	QPSK	1	49	46	20	5537.5	50665	24.43	24.50
		CA_26A-46A	26	15	821.5	26765	QPSK	1	0	46	20	5537.5	50665	24.17	24.23
Intra-Band	Contiguous	CA_38C	38	20	2580	37850	QPSK	1	49	38	20	2599.80	38048	24.55	24.62

<Three Carrier power verification>

Configure	CA Configuration (BCS)	PCC							SCC1				SCC2				Power	
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	CA_2A-14A-30A	2	20	1880	18900	QPSK	1	99	14	10	763	5330	30	10	2355	9820	24.41	24.44
	CA_2A-29A-66A	2	20	1880	18900	QPSK	1	99	29	10	722.5	9715	66	20	2155	66886	24.37	24.44
	CA_2A-4A-13A	2	20	1880	18900	QPSK	1	99	4	20	2132.5	2175	13	10	751	5230	24.38	24.44
	CA_2A-4A-29A	2	20	1880	18900	QPSK	1	99	4	20	2132.5	2175	29	10	722.5	9715	24.44	24.44
	CA_2A-4A-30A	2	20	1880	18900	QPSK	1	99	4	20	2132.5	2175	30	10	2355	9820	24.40	24.44
	CA_2A-5A-7A	2	20	1880	18900	QPSK	1	99	5	10	881.5	2525	7	20	2655	3100	24.38	24.44
	CA_5A-7A-46A	5	10	829	20450	QPSK	1	0	7	20	2655	3100	46	20	5537.5	50665	24.19	24.27
	CA_7A-12A-66A	7	20	2535	21100	QPSK	1	99	12	10	737.5	5095	66	20	2155	66886	24.85	24.86
	CA_25A-25A-26A	25	20	1905	26590	QPSK	1	49	25	5	1932.5	8065	26	15	876.5	8865	24.46	24.50
	CA_26A-41C	26	15	821.5	26765	QPSK	1	0	41	20	2593	40620	41	20	2612.8	40818	24.16	24.23
	CA_46C-71A	71	20	673	133222	QPSK	1	0	46	20	5537.5	50665	46	20	5557.3	50863	24.32	24.38
	CA_7A-7A-26A	7	20	2535	21100	QPSK	1	99	7	5	2687.5	3425	26	15	876.5	8865	24.81	24.86
	CA_4A-7A-12A	4	20	1732.5	20175	QPSK	1	0	7	20	2655	3100	12	10	737.5	5095	24.55	24.63

<Four Carrier power verification>

Configure	CA Configuration (BCS)	PCC							SCC1				SCC2				SCC3				Power	
		LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx.Power (dBm)	W/O CA Tx.Power (dBm)
Inter-Band	CA_2A-12A-66A-66A	2	20	1880	18900	QPSK	1	99	12	10	737.5	5095	66	20	2155	66886	66	5	2197.5	67311	24.36	24.44
	CA_2A-13A-46C	2	20	1880	18900	QPSK	1	99	13	10	751	5230	46	20	5537.5	50665	46	20	5557.3	50863	24.37	24.44
	CA_2A-13A-48C	2	20	1880	18900	QPSK	1	99	13	10	751	5230	48	20	3660	56340	48	20	3679.8	56538	24.44	24.44
	CA_2A-13A-66A-66A	2	20	1880	18900	QPSK	1	99	13	10	751	5230	66	20	2155	66886	66	5	2197.5	67311	24.34	24.44
	CA_2A-14A-66A-66A	2	20	1880	18900	QPSK	1	99	14	10	763	5330	66	20	2155	66886	66	5	2197.5	67311	24.44	24.44
	CA_2A-2A-12A-30A	2	20	1880	18900	QPSK	1	99	2	5	1987.5	1175	12	10	737.5	5095	30	10	2355	9820	24.37	24.44
	CA_2A-2A-30A-66A	2	20	1880	18900	QPSK	1	99	2	5	1987.5	1175	30	10	2355	9820	66	20	2155	66886	24.43	24.44
	CA_2A-2A-4A-12A	2	20	1880	18900	QPSK	1	99	2	5	1987.5	1175	4	20	2132.5	2175	12	10	737.5	5095	24.38	24.44
	CA_2A-2A-4A-5A	2	20	1880	18900	QPSK	1	99	2	5	1987.5	1175	4	20	2132.5	2175	5	10	881.5	2525	24.42	24.44
	CA_2A-2A-5A-30A	2	20	1880	18900	QPSK	1	99	2	5	1987.5	1175	5	10	881.5	2525	30	10	2355	9820	24.34	24.44
	CA_2A-2A-5A-66A	2	20	1880	18900	QPSK	1	99	2	5	1987.5	1175	5	10	881.5	2525	66	20	2155	66886	24.42	24.44
	CA_2A-2A-7A-66A	2	20	1880	18900	QPSK	1	99	2	5	1987.5	1175	7	20	2655	3100	66	20	2155	66886	24.43	24.44
	CA_2A-2A-66A-71A	2	20	1880	18900	QPSK	1	99	2	5	1987.5	1175	66	20	2155	66886	71	20	634.5	68761	24.34	24.44
	CA_2A-30A-66A-66A	2	20	1880	18900	QPSK	1	99	30	10	2355	9820	66	20	2155	66886	66	5	2197.5	67311	24.41	24.44
	CA_2A-46C-66A	2	20	1880	18900	QPSK	1	99	46	20	5537.5	50665	46	20	5557.3	50863	66	20	2155	66886	24.39	24.44
	CA_2A-48C-66A	2	20	1880	18900	QPSK	1	99	48	20	3660	56340	48	20	3679.8	56538	66	20	2155	66886	24.37	24.44
	CA_2A-4A-4A-12A	2	20	1880	18900	QPSK	1	99	4	20	2132.5	2175	4	5	2152.5	2375	12	10	737.5	5095	24.39	24.44
	CA_2A-4A-7A-7A	2	20	1880	18900	QPSK	1	99	4	20	2132.5	2175	7	20	2655	3100	7	5	2687.5	3425	24.37	24.44
	CA_2A-5A-46C	2	20	1880	18900	QPSK	1	99	5	10	881.5	2525	46	20	5537.5	50665	46	20	5557.3	50863	24.43	24.44
	CA_2A-5A-48C	2	20	1880	18900	QPSK	1	99	5	10	881.5	2525	48	20	3660	56340	48	20	3679.8	56538	24.38	24.44
	CA_2A-46A-48C	2	20	1880	18900	QPSK	1	99	46	20	5537.5	50665	48	20	3660	56340	48	20	3679.8	56538	24.40	24.44
	CA_2A-66A-66A-71A	2	20	1880	18900	QPSK	1	99	66	20	2155	66886	66	5	2197.5	67311	71	20	634.5	68761	24.41	24.44
	CA_2A-66C-71A	2	20	1880	18900	QPSK	1	99	66	20	2155	66886	66	20	2174.8	67084	71	20	634.5	68761	24.39	24.44
	CA_2A-7A-12B	2	20	1880	18900	QPSK	1	99	7	20	2655	3100	12	10	740	5120	12	5	732.8	5048	24.37	24.44
	CA_2C-29A-30A	2	20	1880	18900	QPSK	1	99	2	20	1979.8	1098	29	10	722.5	9715	30	10	2355	9820	24.44	24.44
	CA_4A-46A-46C	4	20	1732.5	20175	QPSK	1	0	46	20	5537.5	50665	46	20	5160	46890	46	20	5179.8	47088	24.53	24.63
	CA_4A-48D	4	20	1732.5	20175	QPSK	1	0	48	20	55340	3560	48	20	55359.8	3758	48	20	55379.6	3956	24.55	24.63
	CA_4A-4A-12A-30A	4	20	1732.5	20175	QPSK	1	0	4	5	2152.5	2375	12	10	737.5	5095	30	10	2355	9820	24.63	24.63
	CA_4A-4A-29A-30A	4	20	1732.5	20175	QPSK	1	0	4	5	2152.5	2375	29	10	722.5	9715	30	10	2355	9820	24.54	24.63
	CA_4A-4A-5A-30A	4	20	1732.5	20175	QPSK	1	0	4	5	2152.5	2375	5	10	881.5	2525	30	10	2355	9820	24.59	24.63
	CA_5A-30A-66A-66A	5	10	829	20450	QPSK	1	0	30	10	2355	9820	66	20	2155	66886	66	5	2197.5	67311	24.21	24.27
	CA_5A-46C-66A	5	10	829	20450	QPSK	1	0	46	20	5537.5	50665	46	20	5557.3	50863	66	20	2155	66886	24.23	24.27
	CA_5A-48C-66A	5	10	829	20450	QPSK	1	0	48	20	55340	3560	48	20	55359.8	3758	66	20	2155	66886	24.19	24.27
	CA_5B-46C	5	10	829	20450	QPSK	1	0	5	10	883.9	2549	46	20	5537.5	50665	46	20	5557.3	50863	24.21	24.27
	CA_12A-30A-66A-66A	12	10	704	23060	QPSK	1	49	30	10	2355	9820	66	20	2155	66886	66	5	2197.5	67311	24.36	24.39
	CA_12A-46D	12	10	704	23060	QPSK	1	49	46	20	5537.5	50665	46	20	5557.3	50863	46	20	5577.1	51061	24.32	24.39
	CA_13A-46C-66A	13	10	782	23230	QPSK	1	49	46	20	5537.5	50665	46	20	5557.3	50863	66	20	2155	66886	23.80	23.87
	CA_13A-48C-66A	13	10	782	23230	QPSK	1	49	48	20	55340	3560	48	20	55359.8	3758	66	20	2155	66886	23.85	23.87
	CA_14A-30A-66A-66A	14	10	793	23330	QPSK	1	25	30	10	2355	9820	66	20	2155	66886	66	5	2197.5	67311	24.19	24.27
	CA_25A-41D	25	20	1905	26590	QPSK	1	49	41	20	2593	40620	41	20	2612.8	40818	41	20	2632.6	41016	24.42	24.50
	CA_29A-30A-66A-66A	30	10	2310	27710	QPSK	1	25	29	10	722.5	9715	66	20	2155	66886	66	5	2197.5	67311	23.25	23.33
	CA_2A-2A-4A-71A	2	20	1880	18900	QPSK	1	99	2	5	1987.5	1175	4	20	2132.5	2175	71	20	634.5	68761	24.41	24.44
	CA_2A-7A-7A-29A	2	20	1880	18900	QPSK	1	99	7	20	2655	3100	7	5	2687.5	3425	29	10	722.5	9715	24.42	24.44
	CA_2A-7A-7A-13A	2	20	1880	18900	QPSK	1	99	7	20	2655	3100	7	5	2687.5	3425	13	10	751	5230	24.36	24.44
	CA_2A-7A-46C	2	20	1880	18900	QPSK	1	99	7	20	2655	3100	46	20	5537.5	50665	46	20	5557.3	50863	24.36	24.44
	CA_5A-7A-66A-66A	5	10	829	20450	QPSK	1	0	7	20	2655	3100	66	20	2155	66886	66	5	2197.5	67311	24.18	24.27
	CA_2A-46C-48A	2	20	1880	18900	QPSK	1	99	46	20	5537.5	50665	46	20	5557.3	50863	48	20	55340	3560	24.37	24.44
	CA_46A-48C-66A	48	20	3641	56150	QPSK	1	0	48	20	3621.2	55952	46	20	5537.5	50665	66	20	2155	66886	24.57	24.59

<LTE Uplink carrier aggregation>

2CC Uplink Carrier Aggregation	
Number	Combination
1	CA_7C
2	CA_41C

<Intra-band>

General Note:

i. The device supports intra-band uplink carrier aggregation for LTE B7/B41 with a maximum of two 20MHz component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre 3GPP requirement.

ii. According TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.

iii. Uplink CA is only operating with power class3, and additional SAR measurement for LTE UL CA whit other DL CA combinations active were not required since the maximum output power for this configuration was not > 0.25dB higher than the maximum output power for UL CA active.

Config 0

CA_7C_DSI 2/7										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
20850	21048	QPSK	1	99	1	0	2	0	24.62	25.7
21100	20902	QPSK	1	0	1	99	2	0	24.54	25.7
21350	21152	QPSK	1	0	1	99	2	0	24.85	25.7

CA_7C_ DSI 6/8										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
20850	21048	QPSK	1	99	1	0	2	0	22.31	23.3
21100	20902	QPSK	1	0	1	99	2	0	22.43	23.3
21350	21152	QPSK	1	0	1	99	2	0	22.68	23.3

CA_7C_DSI 4										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
20850	21048	QPSK	1	99	1	0	2	0	22.31	24.1
21100	20902	QPSK	1	0	1	99	2	0	22.43	24.1
21350	21152	QPSK	1	0	1	99	2	0	22.68	24.1

CA_41C_DSI 2/4/6/7/8										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
39750	39948	QPSK	1	99	1	0	2	0	25.41	25.7
40185	39987	QPSK	1	0	1	99	2	0	25.55	25.7
40620	40422	QPSK	1	0	1	99	2	0	25.68	25.7
41055	40857	QPSK	1	0	1	99	2	0	25.51	25.7
41490	41292	QPSK	1	0	1	99	2	0	25.64	25.7

Config 1

CA_7C_ DSI 2/4/6/7/8										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
20850	21048	QPSK	1	99	1	0	2	0	24.56	25.5
21100	20902	QPSK	1	0	1	99	2	0	24.61	25.5
21350	21152	QPSK	1	0	1	99	2	0	24.59	25.5

CA_41C_DSI 2/4/6/7/8										
Combination 20MHz+20MHz (100RB+100RB)										
PCC Channel	SCC Channel	Modulation	PCC		SCC		Total RB Size	Target MPR Level (dB)	Measured Power (dBm)	Tune up Power (dBm)
			RB Size	RB offset	RB Size	RB offset				
39750	39948	QPSK	1	99	1	0	2	0	25.11	25.5
40185	39987	QPSK	1	0	1	99	2	0	25.2	25.5
40620	40422	QPSK	1	0	1	99	2	0	25.27	25.5
41055	40857	QPSK	1	0	1	99	2	0	25.02	25.5
41490	41292	QPSK	1	0	1	99	2	0	25.48	25.5

14. RF Exposure position consideration

Distance of the Antenna to the EUT surface/edge						
Antennas	Front	Back	Top Side	Bottom Side	Right Side	Left Side
WWAN Ant 0	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
WWAN Ant 1	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm
WWAN Ant 2	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
WWAN Ant 5	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
WWAN Ant 7	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm	≤ 25mm
2.4GHz WLAN Ant 3	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm
2.4GHz WLAN/BT Ant 4	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm
5GHz WLAN Ant 3	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm
5GHz WLAN Ant 4	≤ 25mm	≤ 25mm	≤ 25mm	>25mm	≤ 25mm	≤ 25mm

Positions for SAR tests; Hotspot mode						
Antennas	Front	Back	Top Side	Bottom Side	Right Side	Left Side
WWAN Ant 0	Yes	Yes	No	Yes	Yes	Yes
WWAN Ant 1	Yes	Yes	Yes	No	Yes	Yes
WWAN Ant 2	Yes	Yes	No	Yes	Yes	Yes
WWAN Ant 5	Yes	Yes	No	Yes	Yes	Yes
WWAN Ant 7	Yes	Yes	No	Yes	Yes	Yes
2.4GHz WLAN Ant 3	Yes	Yes	Yes	No	Yes	Yes
2.4GHz WLAN/BT Ant 4	Yes	Yes	Yes	No	Yes	Yes
5GHz WLAN Ant 3	Yes	Yes	Yes	No	Yes	Yes
5GHz WLAN Ant 4	Yes	Yes	Yes	No	Yes	Yes

General Note:

1. Referring to KDB 941225 D06 v02r01, when the overall device length and width are ≥ 9cm*5cm, the test distance is 10 mm. SAR must be measured for all sides and surfaces with a transmitting antenna located within 25mm from that surface or edge
2. The detail antenna location refers to operation description.

15. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
   e. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The Reported TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
4. Per KDB 648474 D04v01r03, when the reported SAR for a body-worn accessory measured without a headset connected to the handset is ≤ 1.2 W/kg, SAR testing with a headset connected to the handset is not required.
5. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g product specific SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold, for this device the 5.5GHz WLAN top side product specific SAR is necessary.
6. For 5.3GHz / 5.5GHz WLAN product specific SAR is necessary too, due to an overall diagonal dimension is > 16cm.

GSM Note:

1. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested. Therefore, the GPRS (4Tx slots) for GSM850/GSM1900 is considered as the primary mode.
2. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

UMTS Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA is ≤ ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSUPA, HSDPA, DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, Smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4/B5/B12/B17/B26/B38/B71 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
7. LTE band 2/4/5/17/38 SAR test was covered by Band 25/66/26/12/41; according to TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. The maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion.
   b. The channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band.

5G NR Note:

1. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
   a. SAR testing start with the largest channel bandwidth and measure SAR for PI/2 BPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
   b. 50% RB allocation for PI/2 BPSK SAR testing follows 1RB PI/2 BPSK allocation procedure
   c. PI/2 BPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
   d. QPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in PI/2 BPSK, also reported SAR for the PI/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
   e. Smaller bandwidth output power for each RB allocation configuration for this device will not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
   f. For 5G FR1 n5/n77/n78 the maximum bandwidth does not support three non-overlapping channels, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
   g. SAR testing for NR was performed using Factory Test Mode software to establish the connection, according to manufacturer definition for TDD actual transmission cycle is 33%, but factory test mode software is set and perform SAR with 25%, therefore, the SAR test result will be scaled up to 33%

WLAN Note:

1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
2. Per KDB 248227 D01v02r02, U-NII-1 SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.
3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
5. When in MIMO SAR testing, if the hot spots are separated the scaling factor would scale each hot spot based on the difference between the power for that transmit antenna and the maximum rated power, if the hot spot were not separable or too much overlap which the scaling factor is the worst case rated power/measured power across the two chains in SAR calculation.
6. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

15.1 Head SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	GSM850_Ant 0	GPRS(4 Tx slots)	Left Cheek	0mm	DSI 2/7	251	848.8	28.40	29.50	1.288	-0.15	0.239	0.308
01	GSM850_Ant 1	GPRS(4 Tx slots)	Right Cheek	0mm	DSI 2/7	251	848.8	27.72	28.20	1.117	-0.04	0.591	0.660
	GSM1900_Ant 2	GPRS(4 Tx slots)	Left Cheek	0mm	DSI 2/7	661	1880	25.72	27.00	1.343	0	0.098	0.132
02	GSM1900_Ant 0	GPRS(4 Tx slots)	Left Cheek	0mm	DSI 2/7	810	1909.8	25.54	26.70	1.306	0.1	0.167	0.218

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II_Ant 2	RMC 12.2Kbps	Left Cheek	0mm	DSI 2/7	9262	1852.4	24.35	25.70	1.365	0.07	0.206	0.281
03	WCDMA II_Ant 0	RMC 12.2Kbps	Left Cheek	0mm	DSI 2/7	9262	1852.4	23.73	25.50	1.503	0.09	0.301	0.452
	WCDMA IV_Ant 2	RMC 12.2Kbps	Left Cheek	0mm	DSI 2/7	1312	1712.4	24.60	25.70	1.288	0.03	0.183	0.236
04	WCDMA IV_Ant 0	RMC 12.2Kbps	Left Cheek	0mm	DSI 2/7	1513	1752.6	24.03	25.50	1.403	0.02	0.368	0.516
	WCDMA V_Ant 0	RMC 12.2Kbps	Left Cheek	0mm	DSI 2/7	4132	826.4	23.76	25.00	1.330	-0.19	0.290	0.386
05	WCDMA V_Ant 1	RMC 12.2Kbps	Right Cheek	0mm	DSI 2/7	4132	826.4	23.11	25.00	1.545	-0.01	0.536	0.828

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
06	LTE Band 7_Ant 2	20M	QPSK	1	99	Right Cheek	0mm	DSI 2/7	20850	2510	24.69	25.70	1.262	-0.16	0.339	0.428
	LTE Band 7C_Ant 2	20M	QPSK	1	0	Right Cheek	0mm	DSI 2/7	21350	2560	24.85	25.70	1.216	-0.12	0.352	0.428
	LTE Band 7_Ant 0	20M	QPSK	1	99	Left Cheek	0mm	DSI 2/7	20850	2510	23.89	25.50	1.449	-0.03	0.124	0.180
	LTE Band 7C_Ant 0	20M	QPSK	1	0	Left Cheek	0mm	DSI 2/7	21100	2535	24.61	25.50	1.227	0.06	0.121	0.149
	LTE Band 12_Ant 0	10M	QPSK	1	49	Left Cheek	0mm	DSI 2/7	23095	707.5	24.33	25.70	1.371	-0.07	0.260	0.356
07	LTE Band 12_Ant 1	10M	QPSK	1	49	Right Cheek	0mm	DSI 2/7	23095	707.5	24.06	25.70	1.459	-0.03	0.614	0.896
	LTE Band 13_Ant 0	10M	QPSK	1	49	Left Cheek	0mm	DSI 2/7	23230	782	23.87	25.20	1.358	-0.05	0.258	0.350
08	LTE Band 13_Ant 1	10M	QPSK	1	49	Right Cheek	0mm	DSI 2/7	23230	782	23.04	25.00	1.570	0.03	0.523	0.821
	LTE Band 14_Ant 0	10M	QPSK	1	0	Left Cheek	0mm	DSI 2/7	23330	793	24.23	25.70	1.403	-0.01	0.292	0.410
09	LTE Band 14_Ant 1	10M	QPSK	1	0	Right Cheek	0mm	DSI 2/7	23330	793	23.07	25.00	1.560	-0.05	0.491	0.766
10	LTE Band 25_Ant 2	20M	QPSK	1	99	Right Cheek	0mm	DSI 2/7	26340	1880	24.31	25.70	1.377	0.01	0.206	0.284
	LTE Band 25_Ant 0	20M	QPSK	1	49	Left Cheek	0mm	DSI 2/7	26140	1860	23.59	25.50	1.545	0.11	0.152	0.235
	LTE Band 26_Ant 0	15M	QPSK	1	0	Left Cheek	0mm	DSI 2/7	26865	831.5	24.12	25.70	1.439	-0.13	0.289	0.416
11	LTE Band 26_Ant 1	15M	QPSK	1	0	Right Cheek	0mm	DSI 2/7	26865	831.5	23.06	25.00	1.563	-0.02	0.571	0.893
	LTE Band 30_Ant 2	10M	QPSK	1	0	Right Cheek	0mm	DSI 2/7	27710	2310	23.10	24.20	1.288	-0.1	0.197	0.254
12	LTE Band 30_Ant 0	10M	QPSK	1	25	Left Cheek	0mm	DSI 2/7	27710	2310	24.04	25.70	1.466	0	0.178	0.261
	LTE Band 66_Ant 2	20M	QPSK	1	0	Left Cheek	0mm	DSI 2/7	132322	1745	24.62	25.70	1.282	0.04	0.224	0.287
13	LTE Band 66_Ant 0	20M	QPSK	1	0	Left Cheek	0mm	DSI 2/7	132572	1770	23.70	25.50	1.514	-0.11	0.283	0.428
	LTE Band 71_Ant 0	20M	QPSK	1	0	Left Cheek	0mm	DSI 2/7	133322	683	24.29	25.70	1.384	-0.04	0.230	0.318
14	LTE Band 71_Ant 1	20M	QPSK	1	0	Right Cheek	0mm	DSI 2/7	133322	683	23.17	25.00	1.524	0.01	0.369	0.562

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
15	LTE Band 41_Ant 2	20M	QPSK	1	99	Right Cheek	0mm	DSI 2/7	40185	2549.5	24.56	25.70	1.300	62.9	1.006	0.12	0.216	0.283
	LTE Band 41C_Ant 2	20M	QPSK	1	0	Right Cheek	0mm	DSI 2/7	40620	2593	25.68	25.70	1.005	62.9	1.006	0.02	0.205	0.207
	LTE Band 38_HPUE_Ant 2	20M	QPSK	1	99	Right Cheek	0mm	DSI 2/7	38000	2595	26.32	27.50	1.312	42.9	1.009	0.05	0.206	0.273
	LTE Band 41_Ant 0	20M	QPSK	1	49	Left Cheek	0mm	DSI 2/7	39750	2506	24.14	25.50	1.368	62.9	1.006	0.09	0.087	0.120
	LTE Band 41C_Ant 0	20M	QPSK	1	0	Left Cheek	0mm	DSI 2/7	41490	2593	25.48	25.50	1.005	62.9	1.006	-0.15	0.062	0.063
	LTE Band 38_HPUE_Ant 0	20M	QPSK	1	49	Left Cheek	0mm	DSI 2/7	38000	2595	25.48	27.00	1.419	42.9	1.009	0.08	0.078	0.112
16	LTE Band 48_Ant 7	20M	QPSK	1	0	Left Cheek	0mm	DSI 2/7	56640	3690	24.46	25.70	1.330	62.9	1.006	0.06	0.272	0.364
	LTE Band 48_Ant 2	20M	QPSK	1	0	Right Cheek	0mm	DSI 2/7	56150	3641	24.53	25.70	1.309	62.9	1.006	-0.12	0.081	0.107

<5G NR SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	FR1 n5_Ant 0	20M	BPSK	50	28	Left Cheek	0mm	DSI 2/7	167300	836.5	23.94	25.00	1.276	-0.05	0.175	0.223
17	FR1 n5_Ant 1	20M	BPSK	1	1	Right Cheek	0mm	DSI 2/7	167300	836.5	23.10	25.00	1.549	-0.14	0.494	0.765
	FR1 n77_Ant 7	100M	BPSK	1	271	Right Cheek	0mm	DSI 2/7	656000	3840	24.52	25.70	1.312	0.1	0.119	0.207
	FR1 n77_Ant 7	100M	BPSK	135	69	Right Cheek	0mm	DSI 2/7	656000	3840	24.31	25.70	1.377	0.03	0.112	0.203
	FR1 n77_Ant 7	100M	BPSK	1	271	Right Tilted	0mm	DSI 2/7	656000	3840	24.52	25.70	1.312	0.09	0.115	0.200
	FR1 n77_Ant 7	100M	BPSK	135	69	Right Tilted	0mm	DSI 2/7	656000	3840	24.31	25.70	1.377	0.1	0.108	0.196
	FR1 n77_Ant 7	100M	BPSK	1	271	Left Cheek	0mm	DSI 2/7	656000	3840	24.52	25.70	1.312	0.07	0.147	0.255
18	FR1 n77_Ant 7	100M	BPSK	135	69	Left Cheek	0mm	DSI 2/7	656000	3840	24.31	25.70	1.377	0.11	0.143	0.260
	FR1 n77_Ant 7	100M	BPSK	1	271	Left Tilted	0mm	DSI 2/7	656000	3840	24.52	25.70	1.312	0.01	0.093	0.161
	FR1 n77_Ant 7	100M	BPSK	135	69	Left Tilted	0mm	DSI 2/7	656000	3840	24.31	25.70	1.377	0	0.088	0.160
	FR1 n77_Ant 2	100M	BPSK	1	271	Right Cheek	0mm	DSI 2/7	656000	3840	23.50	25.50	1.585	0.07	0.059	0.123
	FR1 n77_Ant 2	100M	BPSK	135	69	Right Cheek	0mm	DSI 2/7	656000	3840	23.50	25.50	1.585	0.08	0.025	0.053
	FR1 n77_Ant 2	100M	BPSK	1	271	Right Tilted	0mm	DSI 2/7	656000	3840	23.50	25.50	1.585	0.1	0.027	0.056
	FR1 n77_Ant 2	100M	BPSK	135	69	Right Tilted	0mm	DSI 2/7	656000	3840	23.50	25.50	1.585	-0.03	0.031	0.065
	FR1 n77_Ant 2	100M	BPSK	1	271	Left Cheek	0mm	DSI 2/7	656000	3840	23.50	25.50	1.585	-0.09	0.031	0.065
	FR1 n77_Ant 2	100M	BPSK	135	69	Left Cheek	0mm	DSI 2/7	656000	3840	23.50	25.50	1.585	0.1	0.034	0.071
	FR1 n77_Ant 2	100M	BPSK	1	271	Left Tilted	0mm	DSI 2/7	656000	3840	23.50	25.50	1.585	-0.04	0.023	0.049
	FR1 n77_Ant 2	100M	BPSK	135	69	Left Tilted	0mm	DSI 2/7	656000	3840	23.50	25.50	1.585	0.02	0.024	0.051
	FR1 n78_HPUE_Ant 7	100M	BPSK	1	1	Right Cheek	0mm	DSI 2/7	650000	3750	25.62	26.50	1.225	-0.02	0.133	0.214
	FR1 n78_HPUE_Ant 7	100M	BPSK	135	69	Right Cheek	0mm	DSI 2/7	650000	3750	25.34	26.50	1.306	-0.09	0.136	0.234
	FR1 n78_HPUE_Ant 7	100M	BPSK	1	1	Right Tilted	0mm	DSI 2/7	650000	3750	25.62	26.50	1.225	0.05	0.137	0.222
	FR1 n78_HPUE_Ant 7	100M	BPSK	135	69	Right Tilted	0mm	DSI 2/7	650000	3750	25.34	26.50	1.306	0.04	0.131	0.226
19	FR1 n78_HPUE_Ant 7	100M	BPSK	1	1	Left Cheek	0mm	DSI 2/7	650000	3750	25.62	26.50	1.225	0.15	0.184	0.297
	FR1 n78_HPUE_Ant 7	100M	BPSK	135	69	Left Cheek	0mm	DSI 2/7	650000	3750	25.34	26.50	1.306	0.02	0.172	0.296
	FR1 n78_HPUE_Ant 7	100M	BPSK	1	1	Left Tilted	0mm	DSI 2/7	650000	3750	25.62	26.50	1.225	-0.1	0.094	0.151
	FR1 n78_HPUE_Ant 7	100M	BPSK	135	69	Left Tilted	0mm	DSI 2/7	650000	3750	25.34	26.50	1.306	-0.1	0.089	0.153
	FR1 n78_HPUE_Ant 2	100M	BPSK	1	1	Right Cheek	0mm	DSI 2/7	650000	3750	24.44	26.00	1.432	-0.13	0.046	0.087
	FR1 n78_HPUE_Ant 2	100M	BPSK	135	69	Right Cheek	0mm	DSI 2/7	650000	3750	24.21	26.00	1.510	0.05	0.037	0.073
	FR1 n78_HPUE_Ant 2	100M	BPSK	1	1	Right Tilted	0mm	DSI 2/7	650000	3750	24.44	26.00	1.432	-0.08	0.021	0.040
	FR1 n78_HPUE_Ant 2	100M	BPSK	135	69	Right Tilted	0mm	DSI 2/7	650000	3750	24.21	26.00	1.510	-0.08	0.014	0.028
	FR1 n78_HPUE_Ant 2	100M	BPSK	1	1	Left Cheek	0mm	DSI 2/7	650000	3750	24.44	26.00	1.432	-0.07	0.033	0.063
	FR1 n78_HPUE_Ant 2	100M	BPSK	135	69	Left Cheek	0mm	DSI 2/7	650000	3750	24.21	26.00	1.510	0.02	0.028	0.057
	FR1 n78_HPUE_Ant 2	100M	BPSK	1	1	Left Tilted	0mm	DSI 2/7	650000	3750	24.44	26.00	1.432	-0.01	0.020	0.038
	FR1 n78_HPUE_Ant 2	100M	BPSK	135	69	Left Tilted	0mm	DSI 2/7	650000	3750	24.21	26.00	1.510	-0.1	0.023	0.045

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Table	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 4	2	6	2437	15.90	16.00	1.023	100	1.000	0.05	0.198	0.203
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant3	2	6	2437	18.60	19.00	1.096	100	1.000	-0.16	0.355	0.389
20	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant4+Ant3	2	1	2412	17.90	18.00	1.023	100	1.000	-0.14	0.690	0.706
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant4+Ant3	2	1	2412	19.80	20.00	1.047	100	1.000	-0.14	0.047	0.049
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 4	2	58	5290	15.10	15.50	1.096	86	1.163	0.02	0.527	0.672
	WLAN5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 3	2	54	5270	16.60	17.00	1.096	95.96	1.042	-0.02	0.361	0.412
21	WLAN5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 4+3	2	62	5310	15.50	15.50	1.000	93.94	1.065	-0.07	0.659	0.702
	WLAN5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 4+3	2	62	5310	16.80	17.00	1.047	93.94	1.065	-0.07	0.031	0.035
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 4	2	138	5690	14.10	14.50	1.096	86	1.163	0.01	0.210	0.268
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 3	2	138	5690	14.60	15.00	1.096	86	1.163	-0.02	0.348	0.444
22	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 4+3	2	122	5610	14.30	14.50	1.047	86	1.163	-0.07	0.266	0.324
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 4+3	2	122	5610	15.10	15.50	1.096	86	1.163	-0.07	0.433	0.552
23	WLAN5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 4	2	155	5775	14.70	15.00	1.072	86	1.163	0.10	0.549	0.684
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 3	2	155	5775	14.50	15.00	1.122	86	1.163	0.02	0.260	0.339
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 4+3	2	155	5775	14.30	14.50	1.047	86	1.163	-0.11	0.328	0.399
	WLAN5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 4+3	2	155	5775	16.90	17.00	1.023	86	1.163	-0.11	0.464	0.552

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Table	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
24	Bluetooth	1Mbps	Left Cheek	0mm	Ant 4	2	39	2441	14.30	14.50	1.047	77.07	1.081	0.10	0.118	0.134

15.2 Hotspot SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
25	GSM850_Ant 0	GPRS(4 Tx slots)	Left Side	10mm	DSI 6	189	836.4	28.97	29.50	1.130	-0.17	0.244	0.276
	GSM850_Ant 1	GPRS(4 Tx slots)	Back	10mm	DSI 6	189	836.4	28.20	28.20	1.000	-0.04	0.230	0.230
26	GSM1900_Ant 2	GPRS(4 Tx slots)	Bottom Side	10mm	DSI 6	661	1880	25.72	27.00	1.343	0.19	0.450	0.604
	GSM1900_Ant 0	GPRS(4 Tx slots)	Back	10mm	DSI 6	810	1909.8	25.54	26.70	1.306	-0.14	0.354	0.462

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II_Ant 2	RMC 12.2Kbps	Back	10mm	DSI 6	9538	1907.6	24.02	24.90	1.225	-0.16	0.678	0.830
27	WCDMA II_Ant 0	RMC 12.2Kbps	Back	10mm	DSI 6	9538	1907.6	24.03	25.50	1.403	-0.12	0.598	0.839
28	WCDMA IV_Ant 2	RMC 12.2Kbps	Bottom Side	10mm	DSI 6	1513	1752.6	23.59	24.40	1.205	-0.11	0.602	0.725
	WCDMA IV_Ant 0	RMC 12.2Kbps	Left Side	10mm	DSI 6	1513	1752.6	24.02	25.50	1.406	-0.14	0.424	0.596
	WCDMA V_Ant 0	RMC 12.2Kbps	Left Side	10mm	DSI 6	4182	836.4	23.80	25.00	1.318	-0.14	0.240	0.316
29	WCDMA V_Ant 1	RMC 12.2Kbps	Back	10mm	DSI 6	4132	826.4	23.11	25.00	1.545	-0.03	0.223	0.345

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
30	LTE Band 7_Ant 2	20M	QPSK	50	50	Bottom Side	10mm	DSI 6	21350	2560	22.52	23.30	1.197	0.02	0.664	0.795
	LTE Band 7C_Ant 2	20M	QPSK	1	0	Bottom Side	10mm	DSI 6	21350	2560	22.68	23.30	1.153	0.1	0.685	0.790
	LTE Band 7_Ant 0	20M	QPSK	1	99	Left Side	10mm	DSI 6	20850	2510	23.89	25.50	1.449	-0.06	0.282	0.409
	LTE Band 7C_Ant 0	20M	QPSK	1	0	Left Side	10mm	DSI 6	21100	2535	24.61	25.50	1.227	-0.13	0.304	0.373
	LTE Band 12_Ant 0	10M	QPSK	1	49	Back	10mm	DSI 6	23095	707.5	24.33	25.70	1.371	0.01	0.127	0.174
31	LTE Band 12_Ant 1	10M	QPSK	1	49	Left Side	10mm	DSI 6	23095	707.5	24.06	25.70	1.459	0.06	0.318	0.464
32	LTE Band 13_Ant 0	10M	QPSK	1	49	Back	10mm	DSI 6	23230	782	23.87	25.20	1.358	-0.17	0.304	0.413
	LTE Band 13_Ant 1	10M	QPSK	1	49	Back	10mm	DSI 6	23230	782	23.04	25.00	1.570	-0.19	0.217	0.341
33	LTE Band 14_Ant 0	10M	QPSK	1	0	Back	10mm	DSI 6	23330	793	24.27	25.70	1.390	-0.18	0.310	0.431
	LTE Band 14_Ant 1	10M	QPSK	1	0	Back	10mm	DSI 6	23330	793	23.07	25.00	1.560	-0.16	0.225	0.351
	LTE Band 25_Ant 2	20M	QPSK	50	50	Bottom Side	10mm	DSI 6	26590	1905	22.94	24.00	1.276	-0.11	0.602	0.768
34	LTE Band 25_Ant 0	20M	QPSK	1	99	Left Side	10mm	DSI 6	26340	1880	23.10	25.10	1.585	0.03	0.586	0.929
35	LTE Band 26_Ant 0	15M	QPSK	1	0	Left Side	10mm	DSI 6	26865	831.5	24.12	25.70	1.439	-0.04	0.311	0.447
	LTE Band 26_Ant 1	15M	QPSK	1	0	Back	10mm	DSI 6	26865	831.5	23.06	25.00	1.563	-0.05	0.249	0.389
	LTE Band 30_Ant 2	10M	QPSK	1	0	Back	10mm	DSI 6	27710	2310	23.10	24.20	1.288	0	0.599	0.772
36	LTE Band 30_Ant 0	10M	QPSK	1	25	Back	10mm	DSI 6	27710	2310	24.04	25.70	1.466	-0.04	0.594	0.871
37	LTE Band 66_Ant 2	20M	QPSK	50	50	Bottom Side	10mm	DSI 6	132572	1770	22.99	24.00	1.262	-0.14	0.641	0.809
	LTE Band 66_Ant 0	20M	QPSK	1	0	Back	10mm	DSI 6	132072	1720	23.54	25.10	1.432	-0.13	0.467	0.669
38	LTE Band 71_Ant 0	20M	QPSK	1	0	Back	10mm	DSI 6	133322	683	24.29	25.70	1.384	-0.14	0.324	0.448
	LTE Band 71_Ant 1	20M	QPSK	1	0	Left Side	10mm	DSI 6	133322	683	23.17	25.00	1.524	-0.05	0.234	0.357

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
39	LTE Band 41_Ant 2	20M	QPSK	1	49	Back	10mm	DSI 6	41055	2636.5	24.72	25.70	1.253	62.9	1.006	-0.06	0.576	0.726
	LTE Band 41C_Ant 2	20M	QPSK	1	0	Back	10mm	DSI 6	40620	2593	25.68	25.70	1.005	62.9	1.006	0.03	0.495	0.500
	LTE Band 38_HPUE_Ant 2	20M	QPSK	1	99	Back	10mm	DSI 6	38000	2595	26.32	27.50	1.312	42.9	1.009	0.08	0.530	0.702
	LTE Band 41_Ant 0	20M	QPSK	1	49	Left Side	10mm	DSI 6	39750	2506	24.14	25.50	1.368	62.9	1.006	0.15	0.204	0.281
	LTE Band 41C_Ant 0	20M	QPSK	1	0	Left Side	10mm	DSI 6	41490	2593	25.48	25.50	1.005	62.9	1.006	-0.15	0.141	0.143
	LTE Band 38_HPUE_Ant 0	20M	QPSK	1	0	Left Side	10mm	DSI 6	38000	2595	25.48	26.70	1.324	42.9	1.009	-0.07	0.178	0.238
40	LTE Band 48_Ant 7	20M	QPSK	50	24	Back	10mm	DSI 6	55830	3609	22.04	23.30	1.337	62.9	1.006	-0.14	0.588	0.791
	LTE Band 48_Ant 2	20M	QPSK	100	0	Back	10mm	DSI 6	56640	3690	23.38	24.10	1.180	62.9	1.006	-0.09	0.559	0.664

<5G NR SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
41	FR1 n5_Ant 0	20M	BPSK	50	28	Back	10mm	DSI 6	167300	836.5	23.94	25.00	1.276	0.04	0.281	0.359
	FR1 n5_Ant 1	20M	BPSK	50	28	Back	10mm	DSI 6	167300	836.5	23.14	25.00	1.535	-0.1	0.193	0.296
	FR1 n77_Ant 7	100M	BPSK	1	271	Front	10mm	DSI 6	656000	3840	24.52	25.70	1.312	-0.1	0.146	0.253
	FR1 n77_Ant 7	100M	BPSK	135	69	Front	10mm	DSI 6	656000	3840	24.31	25.70	1.377	-0.14	0.132	0.240
42	FR1 n77_Ant 7	100M	BPSK	1	271	Back	10mm	DSI 6	656000	3840	24.52	25.70	1.312	-0.09	0.339	0.587
	FR1 n77_Ant 7	100M	BPSK	135	69	Back	10mm	DSI 6	656000	3840	24.31	25.70	1.377	-0.18	0.308	0.560
	FR1 n77_Ant 7	100M	BPSK	1	271	Left Side	10mm	DSI 6	656000	3840	24.52	25.70	1.312	0.02	0.242	0.419
	FR1 n77_Ant 7	100M	BPSK	135	69	Left Side	10mm	DSI 6	656000	3840	24.31	25.70	1.377	0.06	0.236	0.429
	FR1 n77_Ant 7	100M	BPSK	1	271	Right Side	10mm	DSI 6	656000	3840	24.52	25.70	1.312	-0.03	0.001	0.002
	FR1 n77_Ant 7	100M	BPSK	135	69	Right Side	10mm	DSI 6	656000	3840	24.31	25.70	1.377	0.01	0.001	0.002
	FR1 n77_Ant 7	100M	BPSK	1	271	Bottom Side	10mm	DSI 6	656000	3840	24.52	25.70	1.312	0	0.129	0.223
	FR1 n77_Ant 7	100M	BPSK	135	69	Bottom Side	10mm	DSI 6	656000	3840	24.31	25.70	1.377	0.05	0.134	0.244
	FR1 n77_Ant 2	100M	BPSK	1	271	Front	10mm	DSI 6	656000	3840	23.50	25.50	1.585	0.17	0.121	0.253
	FR1 n77_Ant 2	100M	BPSK	135	69	Front	10mm	DSI 6	656000	3840	23.50	25.50	1.585	0.18	0.124	0.259
	FR1 n77_Ant 2	100M	BPSK	1	271	Back	10mm	DSI 6	656000	3840	23.50	25.50	1.585	-0.18	0.089	0.186
	FR1 n77_Ant 2	100M	BPSK	135	69	Back	10mm	DSI 6	656000	3840	23.50	25.50	1.585	-0.1	0.092	0.192
	FR1 n77_Ant 2	100M	BPSK	1	271	Left Side	10mm	DSI 6	656000	3840	23.50	25.50	1.585	0.02	0.048	0.100
	FR1 n77_Ant 2	100M	BPSK	135	69	Left Side	10mm	DSI 6	656000	3840	23.50	25.50	1.585	-0.03	0.048	0.100
	FR1 n77_Ant 2	100M	BPSK	1	271	Right Side	10mm	DSI 6	656000	3840	23.50	25.50	1.585	0.01	0.093	0.195
	FR1 n77_Ant 2	100M	BPSK	135	69	Right Side	10mm	DSI 6	656000	3840	23.50	25.50	1.585	0	0.113	0.236
	FR1 n77_Ant 2	100M	BPSK	1	271	Bottom Side	10mm	DSI 6	656000	3840	23.50	25.50	1.585	0.05	0.038	0.079
	FR1 n77_Ant 2	100M	BPSK	135	69	Bottom Side	10mm	DSI 6	656000	3840	23.50	25.50	1.585	-0.07	0.041	0.086

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	FR1 n78_HPUE_Ant 7	100M	BPSK	1	1	Front	10mm	DSI 6	650000	3750	25.62	26.50	1.225	0.02	0.181	0.293
	FR1 n78_HPUE_Ant 7	100M	BPSK	135	69	Front	10mm	DSI 6	650000	3750	25.34	26.50	1.306	-0.03	0.158	0.272
43	FR1 n78_HPUE_Ant 7	100M	BPSK	1	1	Back	10mm	DSI 6	650000	3750	25.62	26.50	1.225	0.17	0.477	0.771
	FR1 n78_HPUE_Ant 7	100M	BPSK	135	69	Back	10mm	DSI 6	650000	3750	25.34	26.50	1.306	0.01	0.361	0.622
	FR1 n78_HPUE_Ant 7	100M	BPSK	1	1	Left Side	10mm	DSI 6	650000	3750	25.62	26.50	1.225	0	0.224	0.362
	FR1 n78_HPUE_Ant 7	100M	BPSK	135	69	Left Side	10mm	DSI 6	650000	3750	25.34	26.50	1.306	0.05	0.220	0.379
	FR1 n78_HPUE_Ant 7	100M	BPSK	1	1	Right Side	10mm	DSI 6	650000	3750	25.62	26.50	1.225	0.02	0.001	0.002
	FR1 n78_HPUE_Ant 7	100M	BPSK	135	69	Right Side	10mm	DSI 6	650000	3750	25.34	26.50	1.306	-0.04	0.001	0.002
	FR1 n78_HPUE_Ant 7	100M	BPSK	1	1	Bottom Side	10mm	DSI 6	650000	3750	25.62	26.50	1.225	-0.08	0.221	0.357
	FR1 n78_HPUE_Ant 7	100M	BPSK	135	69	Bottom Side	10mm	DSI 6	650000	3750	25.34	26.50	1.306	0.06	0.185	0.319
	FR1 n78_HPUE_Ant 2	100M	BPSK	1	1	Front	10mm	DSI 6	650000	3750	24.44	26.00	1.432	0.02	0.179	0.338
	FR1 n78_HPUE_Ant 2	100M	BPSK	135	69	Front	10mm	DSI 6	650000	3750	24.21	26.00	1.510	-0.03	0.152	0.303
	FR1 n78_HPUE_Ant 2	100M	BPSK	1	1	Back	10mm	DSI 6	650000	3750	24.44	26.00	1.432	-0.1	0.298	0.563
	FR1 n78_HPUE_Ant 2	100M	BPSK	135	69	Back	10mm	DSI 6	650000	3750	24.21	26.00	1.510	0.05	0.168	0.335
	FR1 n78_HPUE_Ant 2	100M	BPSK	1	1	Left Side	10mm	DSI 6	650000	3750	24.44	26.00	1.432	-0.04	0.001	0.002
	FR1 n78_HPUE_Ant 2	100M	BPSK	135	69	Left Side	10mm	DSI 6	650000	3750	24.21	26.00	1.510	0.01	0.036	0.072
	FR1 n78_HPUE_Ant 2	100M	BPSK	1	1	Right Side	10mm	DSI 6	650000	3750	24.44	26.00	1.432	0	0.213	0.403
	FR1 n78_HPUE_Ant 2	100M	BPSK	135	69	Right Side	10mm	DSI 6	650000	3750	24.21	26.00	1.510	0.05	0.158	0.315
	FR1 n78_HPUE_Ant 2	100M	BPSK	1	1	Bottom Side	10mm	DSI 6	650000	3750	24.44	26.00	1.432	-0.06	0.191	0.361
	FR1 n78_HPUE_Ant 2	100M	BPSK	135	69	Bottom Side	10mm	DSI 6	650000	3750	24.21	26.00	1.510	0.03	0.133	0.265

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Table	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 4	3	1	2412	19.60	20.00	1.096	100	1.000	0.10	0.246	0.270
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant3	3	11	2462	19.60	20.00	1.096	100	1.000	-0.15	0.410	0.450
44	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant4+Ant3	3	11	2462	19.90	20.00	1.023	100	1.000	-0.10	0.319	0.326
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant4+Ant3	3	11	2462	19.20	20.00	1.202	100	1.000	-0.10	0.390	0.469
45	WLAN5GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 4	3	46	5230	17.00	17.50	1.122	94.9	1.054	0.14	0.254	0.300
	WLAN5GHz	802.11n-HT40 MCS0	Left Side	10mm	Ant 3	3	46	5230	16.90	17.50	1.148	95.96	1.042	-0.03	0.076	0.091
	WLAN5GHz	802.11n-HT40 MCS0	Right Side	10mm	Ant 4+3	3	46	5230	17.30	17.50	1.047	93.94	1.065	0.16	0.211	0.235
46	WLAN5GHz	802.11a 6Mbps	Top Side	10mm	Ant 4	3	157	5785	19.30	19.50	1.047	98.54	1.015	-0.14	0.637	0.677
	WLAN5GHz	802.11n-HT40 MCS0	Left Side	10mm	Ant 3	3	159	5795	17.30	17.50	1.047	95.96	1.042	-0.11	0.117	0.128
	WLAN5GHz	802.11a 6Mbps	Top Side	10mm	Ant 4+3	3	157	5785	19.40	19.50	1.023	98.07	1.020	0.06	0.543	0.567

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Table	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
47	Bluetooth	1Mbps	Back	10mm	Ant 4	3	39	2441	17.70	18.00	1.072	77.07	1.081	-0.15	0.103	0.119

15.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
48	GSM850_Ant 0	GPRS(4 Tx slots)	Back	10mm	DSI 4/8	251	848.8	28.40	29.50	1.288	-0.03	0.351	0.452
	GSM850_Ant 1	GPRS(4 Tx slots)	Back	10mm	DSI 4/8	189	836.4	28.20	28.20	1.000	-0.04	0.230	0.230
49	GSM1900_Ant 2	GPRS(4 Tx slots)	Back	10mm	DSI 4/8	661	1880	25.72	27.00	1.343	-0.01	0.432	0.580
	GSM1900_Ant 0	GPRS(4 Tx slots)	Back	10mm	DSI 4/8	810	1909.8	25.54	26.70	1.306	-0.14	0.354	0.462

<WCDMA SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WCDMA II_Ant 2	RMC 12.2Kbps	Back	10mm	DSI 8	9538	1907.6	24.02	24.90	1.225	-0.16	0.678	0.830
50	WCDMA II_Ant 2	RMC 12.2Kbps	Back	10mm	DSI 4	9538	1907.6	24.02	25.70	1.472	-0.16	0.678	0.998
	WCDMA II_Ant 0	RMC 12.2Kbps	Back	10mm	DSI 4/8	9538	1907.6	24.03	25.50	1.403	-0.12	0.598	0.839
	WCDMA IV_Ant 2	RMC 12.2Kbps	Back	10mm	DSI 8	1513	1752.6	23.59	24.60	1.262	-0.03	0.535	0.675
51	WCDMA IV_Ant 2	RMC 12.2Kbps	Back	10mm	DSI 4	1513	1752.6	23.62	25.20	1.439	-0.03	0.535	0.770
	WCDMA IV_Ant 0	RMC 12.2Kbps	Back	10mm	DSI 4/8	1513	1752.6	24.03	25.50	1.403	-0.03	0.535	0.751
52	WCDMA V_Ant 0	RMC 12.2Kbps	Back	10mm	DSI 4/8	4233	846.6	23.73	25.00	1.340	-0.14	0.273	0.366
	WCDMA V_Ant 1	RMC 12.2Kbps	Back	10mm	DSI 4/8	4132	826.4	23.11	25.00	1.545	-0.03	0.223	0.345

<FDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	LTE Band 7_Ant 2	20M	QPSK	50	50	Back	10mm	DSI 8	20850	2510	22.45	23.30	1.216	-0.04	0.592	0.720
	LTE Band 7C_Ant 2	20M	QPSK	1	0	Back	10mm	DSI 8	21350	2560	22.68	23.30	1.153	0.05	0.651	0.751
53	LTE Band 7_Ant 2	20M	QPSK	100	0	Back	10mm	DSI 4	21350	2560	22.46	24.10	1.459	-0.03	0.631	0.921
	LTE Band 7C_Ant 2	20M	QPSK	1	0	Back	10mm	DSI 4	21350	2560	22.68	24.10	1.387	0.05	0.651	0.903
	LTE Band 7_Ant 0	20M	QPSK	1	99	Back	10mm	DSI 4/8	21100	2535	23.96	25.50	1.426	-0.14	0.201	0.287
	LTE Band 7C_Ant 0	20M	QPSK	1	0	Back	10mm	DSI 4/8	21100	2535	24.61	25.50	1.227	-0.11	0.234	0.287
	LTE Band 12_Ant 0	10M	QPSK	1	49	Back	10mm	DSI 4/8	23095	707.5	24.33	25.70	1.371	0.01	0.127	0.174
54	LTE Band 12_Ant 1	10M	QPSK	1	49	Back	10mm	DSI 4/8	23095	707.5	24.06	25.70	1.459	-0.16	0.187	0.273
55	LTE Band 13_Ant 0	10M	QPSK	1	49	Back	10mm	DSI 4/8	23230	782	23.87	25.20	1.358	-0.17	0.304	0.413
	LTE Band 13_Ant 1	10M	QPSK	1	49	Back	10mm	DSI 4/8	23230	782	23.04	25.00	1.570	-0.19	0.217	0.341
56	LTE Band 14_Ant 0	10M	QPSK	1	0	Back	10mm	DSI 4/8	23330	793	24.27	25.70	1.390	-0.18	0.310	0.431
	LTE Band 14_Ant 1	10M	QPSK	1	0	Back	10mm	DSI 4/8	23330	793	23.07	25.00	1.560	-0.16	0.225	0.351
	LTE Band 25_Ant 2	20M	QPSK	50	50	Back	10mm	DSI 8	26590	1905	22.94	24.00	1.276	-0.16	0.532	0.679
57	LTE Band 25_Ant 2	20M	QPSK	100	0	Back	10mm	DSI 4	26590	1905	23.52	24.70	1.312	-0.13	0.610	0.800
	LTE Band 25_Ant 0	20M	QPSK	1	49	Back	10mm	DSI 4/8	26340	1880	23.61	25.50	1.545	-0.14	0.386	0.596
58	LTE Band 26_Ant 0	15M	QPSK	1	0	Back	10mm	DSI 4/8	26865	831.5	24.12	25.70	1.439	-0.15	0.327	0.470
	LTE Band 26_Ant 1	15M	QPSK	1	0	Back	10mm	DSI 4/8	26865	831.5	23.06	25.00	1.563	-0.05	0.249	0.389
	LTE Band 30_Ant 2	10M	QPSK	1	0	Back	10mm	DSI 4/8	27710	2310	23.10	24.20	1.288	0	0.599	0.772
59	LTE Band 30_Ant 0	10M	QPSK	1	25	Back	10mm	DSI 4/8	27710	2310	24.04	25.70	1.466	-0.04	0.594	0.871
	LTE Band 66_Ant 2	20M	QPSK	50	50	Back	10mm	DSI 8	132072	1720	23.16	24.00	1.213	-0.11	0.543	0.659
60	LTE Band 66_Ant 2	20M	QPSK	50	50	Back	10mm	DSI 4	132072	1720	23.16	24.70	1.426	-0.11	0.543	0.774
	LTE Band 66_Ant 0	20M	QPSK	1	0	Back	10mm	DSI 8	132072	1720	23.54	25.10	1.432	-0.13	0.467	0.669
	LTE Band 66_Ant 0-	20M	QPSK	1	0	Back	10mm	DSI 4	132572	1770	23.70	25.50	1.514	-0.17	0.479	0.725
61	LTE Band 71_Ant 0	20M	QPSK	1	0	Back	10mm	DSI 4/8	133322	683	24.29	25.70	1.384	-0.14	0.324	0.448
	LTE Band 71_Ant 1	20M	QPSK	1	0	Back	10mm	DSI 4/8	133322	683	23.17	25.00	1.524	-0.04	0.171	0.261

<TDD LTE SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
62	LTE Band 41_Ant 2	20M	QPSK	1	49	Back	10mm	DSI 4/8	41055	2636.5	24.72	25.70	1.253	62.9	1.006	-0.06	0.576	0.726
	LTE Band 41C_Ant 2	20M	QPSK	1	0	Back	10mm	DSI 4/8	40620	2593	25.68	25.70	1.005	62.9	1.006	0.03	0.495	0.500
	LTE Band 38_HPUE_Ant 2	20M	QPSK	1	99	Back	10mm	DSI 4/8	38000	2595	26.32	27.50	1.312	42.9	1.009	0.08	0.530	0.702
	LTE Band 41_Ant 0	20M	QPSK	1	49	Back	10mm	DSI 4/8	40185	2549.5	24.25	25.50	1.334	62.9	1.006	-0.07	0.127	0.170
	LTE Band 41C_Ant 0	20M	QPSK	1	0	Back	10mm	DSI 4/8	41490	2593	25.48	25.50	1.005	62.9	1.006	-0.15	0.165	0.167
	LTE Band 38_HPUE_Ant 0	20M	QPSK	1	0	Back	10mm	DSI 4/8	38000	2595	25.48	26.70	1.324	42.9	1.009	-0.07	0.118	0.158
	LTE Band 48_Ant 7	20M	QPSK	50	24	Back	10mm	DSI 8	55830	3609	22.04	23.30	1.337	62.9	1.006	-0.14	0.588	0.791
63	LTE Band 48_Ant 7	20M	QPSK	50	24	Back	10mm	DSI 4	55830	3609	22.91	24.10	1.315	62.9	1.006	0.12	0.725	0.959
	LTE Band 48_Ant 2	20M	QPSK	100	0	Back	10mm	DSI 8	56640	3690	23.38	24.10	1.180	62.9	1.006	-0.09	0.559	0.664
	LTE Band 48_Ant 2	20M	QPSK	1	0	Back	10mm	DSI 4	56640	3690	24.28	24.90	1.153	62.9	1.006	-0.19	0.657	0.762

<5G NR SAR>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
64	FR1 n5_Ant 0	20M	BPSK	50	28	Back	10mm	DSI 4/8	167300	836.5	23.94	25.00	1.276	0.04	0.281	0.359
	FR1 n5_Ant 1	20M	BPSK	50	28	Back	10mm	DSI 4/8	167300	836.5	23.14	25.00	1.535	-0.1	0.193	0.296
	FR1 n77_Ant 7	100M	BPSK	1	271	Front	10mm	DSI 4/8	656000	3840	24.52	25.70	1.312	-0.1	0.146	0.253
	FR1 n77_Ant 7	100M	BPSK	135	69	Front	10mm	DSI 4/8	656000	3840	24.31	25.70	1.377	-0.14	0.132	0.240
65	FR1 n77_Ant 7	100M	BPSK	1	271	Back	10mm	DSI 4/8	656000	3840	24.52	25.70	1.312	-0.09	0.339	0.587
	FR1 n77_Ant 7	100M	BPSK	135	69	Back	10mm	DSI 4/8	656000	3840	24.31	25.70	1.377	-0.18	0.308	0.560
	FR1 n77_Ant 2	100M	BPSK	1	271	Front	10mm	DSI 4/8	656000	3840	23.50	25.50	1.585	0.17	0.121	0.253
	FR1 n77_Ant 2	100M	BPSK	135	69	Front	10mm	DSI 4/8	656000	3840	23.50	25.50	1.585	0.18	0.124	0.259
	FR1 n77_Ant 2	100M	BPSK	1	271	Back	10mm	DSI 4/8	656000	3840	23.50	25.50	1.585	-0.18	0.089	0.186
	FR1 n77_Ant 2	100M	BPSK	135	69	Back	10mm	DSI 4/8	656000	3840	23.50	25.50	1.585	-0.1	0.092	0.192
	FR1 n78_HPUE_Ant 7	100M	BPSK	1	1	Front	10mm	DSI 4/8	650000	3750	25.62	26.50	1.225	0.02	0.181	0.293
	FR1 n78_HPUE_Ant 7	100M	BPSK	135	69	Front	10mm	DSI 4/8	650000	3750	25.34	26.50	1.306	-0.03	0.158	0.272
66	FR1 n78_HPUE_Ant 7	100M	BPSK	1	1	Back	10mm	DSI 4/8	650000	3750	25.62	26.50	1.225	0.17	0.477	0.771
	FR1 n78_HPUE_Ant 7	100M	BPSK	135	69	Back	10mm	DSI 4/8	650000	3750	25.34	26.50	1.306	0.01	0.361	0.622
	FR1 n78_HPUE_Ant 2	100M	BPSK	1	1	Front	10mm	DSI 4/8	650000	3750	24.44	26.00	1.432	0.02	0.179	0.338
	FR1 n78_HPUE_Ant 2	100M	BPSK	135	69	Front	10mm	DSI 4/8	650000	3750	24.21	26.00	1.510	-0.03	0.152	0.303
	FR1 n78_HPUE_Ant 2	100M	BPSK	1	1	Back	10mm	DSI 4/8	650000	3750	24.44	26.00	1.432	-0.1	0.298	0.563
	FR1 n78_HPUE_Ant 2	100M	BPSK	135	69	Back	10mm	DSI 4/8	650000	3750	24.21	26.00	1.510	0.05	0.168	0.335

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 4	1/3	1	2412	19.60	20.00	1.096	100	1.000	0.10	0.246	0.270
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant3	1/3	11	2462	19.60	20.00	1.096	100	1.000	-0.15	0.410	0.450
67	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant4+Ant3	1/3	11	2462	19.90	20.00	1.023	100	1.000	-0.10	0.319	0.326
	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant4+Ant3	1/3	11	2462	19.20	20.00	1.202	100	1.000	-0.10	0.390	0.469
68	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 4	1/3	54	5270	17.20	17.50	1.072	94.9	1.054	-0.09	0.127	0.143
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 3	1/3	54	5270	17.20	17.50	1.072	95.96	1.042	0.02	0.086	0.096
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 4+3	1/3	54	5270	17.30	17.50	1.047	93.94	1.065	-0.02	0.095	0.106
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 4+3	1/3	54	5270	17.20	17.50	1.072	93.94	1.065	-0.02	0.101	0.115
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 4	1/3	134	5670	17.20	17.50	1.072	94.9	1.054	-0.13	0.134	0.151
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 3	1	134	5670	16.80	17.50	1.175	95.96	1.042	-0.10	0.111	0.136
	WLAN5GHz	802.11ac-VHT80 MCS0	Back	10mm	Ant 3	3	138	5690	14.70	15.00	1.072	86	1.163	-0.04	0.065	0.081
69	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 4+3	1/3	134	5670	17.50	17.50	1.000	93.94	1.065	-0.05	0.157	0.167
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 4+3	1/3	134	5670	16.70	17.50	1.202	93.94	1.065	-0.05	0.093	0.119
70	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 4	1/3	149	5745	19.30	19.50	1.047	98.54	1.015	-0.15	0.281	0.299
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 3	1	149	5745	19.10	19.50	1.096	98.54	1.015	-0.12	0.243	0.270
	WLAN5GHz	802.11n-HT40 MCS0	Back	10mm	Ant 3	3	159	5795	17.30	17.50	1.047	95.96	1.042	-0.06	0.120	0.131
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 4+3	1/3	157	5785	19.40	19.50	1.023	98.07	1.020	-0.17	0.207	0.216
	WLAN5GHz	802.11a 6Mbps	Back	10mm	Ant 4+3	1/3	157	5785	19.00	19.50	1.122	98.07	1.020	-0.17	0.179	0.205

<Bluetooth SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
71	Bluetooth	1Mbps	Back	10mm	Ant 4	1/3	39	2441	17.70	18.00	1.072	77.07	1.081	-0.15	0.103	0.119

15.4 Product Specific SAR

<WLAN SAR>

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Output Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
72	WLAN5GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 4	1	54	5270	17.20	17.50	1.072	94.9	1.054	0.10	0.761	0.859
	WLAN5GHz	802.11n-HT40 MCS0	Back	0mm	Ant 3	1	54	5270	17.20	17.50	1.072	95.96	1.042	0.11	0.434	0.485
	WLAN5GHz	802.11n-HT40 MCS0	Back	0mm	Ant 4+3	1	54	5270	17.30	17.50	1.047	93.94	1.065	-0.13	0.471	0.525
	WLAN5GHz	802.11n-HT40 MCS0	Back	0mm	Ant 4+3	1	54	5270	17.20	17.50	1.072	93.94	1.065	-0.13	0.461	0.526
73	WLAN5GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 4	1	134	5670	17.20	17.50	1.072	94.90	1.054	0.10	0.873	0.986
	WLAN5GHz	802.11n-HT40 MCS0	Back	0mm	Ant 3	1	142	5710	16.60	17.50	1.230	95.96	1.042	-0.17	0.491	0.629
	WLAN5GHz	802.11n-HT40 MCS0	Back	0mm	Ant 4+3	1	134	5670	17.50	17.50	1.000	93.94	1.065	-0.05	0.486	0.518
	WLAN5GHz	802.11n-HT40 MCS0	Back	0mm	Ant 4+3	1	134	5670	16.70	17.50	1.202	93.94	1.065	-0.05	0.489	0.626

15.5 LTE Power Class 2 and Power Class 3 Linearity

This device support Power Class 2 and Power Class 3 operations for LTE Band 38. The highest available duty cycle for Power Class 2 operation is 43.3% using UL-DL configuration 1. Per FCC Guidance based on the device behavior, all SAR tests were performed using Power Class 3. Power Class 2 is tested using the highest SAR test configuration in Power Class 3 for each LTE configuration and exposure condition combination, according to the highest time averaged power for all applicable uplink-downlink configurations in Power Class 2. When the reported SAR vs. output power is linearly scaled with < 10% discrepancy between power classes and all reported SAR are < 1.4 W/kg, Separate SAR testing for Power Class 2 is not required

<LTE Band 41 and B38_HPUE Linearity Data for Head>

Config 0		
Maximum Tune up Power (dBm)	25.7	27.5
Reported 1g SAR (W/kg)	0.283	0.273
Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	235.18	243.49
Linearity SAR(W/kg)	0.29	
% deviation from expected linearity		-6.83%

Config 1		
Maximum Tune up Power (dBm)	25.5	27
Reported 1g SAR (W/kg)	0.12	0.112
Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	224.60	217.01
Linearity SAR(W/kg)	0.12	
% deviation from expected linearity		-3.41%

<LTE Band 41 and B38_HPUE Linearity Data for Hotspot>

Config 0		
Maximum Tune up Power (dBm)	25.7	27.5
Reported 1g SAR (W/kg)	0.726	0.702
Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	235.18	243.49
Linearity SAR(W/kg)	0.75	
% deviation from expected linearity		-6.61%

Config 1		
Maximum Tune up Power (dBm)	25.5	26.7
Reported 1g SAR (W/kg)	0.281	0.238
Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	224.60	202.53
Linearity SAR(W/kg)	0.25	
% deviation from expected linearity		-6.07%

<LTE Band 41 and B38_HPUE Linearity Data for Body-worn>

Config 0		
Maximum Tune up Power (dBm)	25.7	27.5
Reported 1g SAR (W/kg)	0.726	0.702
Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	235.18	243.49
Linearity SAR(W/kg)	0.75	
% deviation from expected linearity		-6.61%

Config 1		
Maximum Tune up Power (dBm)	25.5	26.7
Reported 1g SAR (W/kg)	0.17	0.158
Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	224.60	202.53
Linearity SAR(W/kg)	0.15	
% deviation from expected linearity		3.07%

16. Simultaneous Transmission Analysis

Config	Mode	Capable TX Configurations
1	WWAN OFF (Cellular off)	WiFi 5G SISO (Chain0) + Bluetooth
2		WiFi 5G SISO (Chain1) + Bluetooth
3		WiFi 5G MIMO + Bluetooth
4		WiFi 5G SISO (Chain1)
5		WiFi 5G SISO (Chain0)
6		WiFi 5G MIMO
7		WiFi 2.4G SISO (Chain1)
8		WiFi 2.4G SISO (Chain0)
9		WiFi 2.4G MIMO/CDD
10		Bluetooth
11		WiFi 2.4G SISO (Chain0) + WiFi 5G SISO (Chain1)
12	WWAN ON (Cellular on)	WiFi 5G SISO (Chain0) + Bluetooth
13		WiFi 5G SISO (Chain1) + Bluetooth
14		WiFi 5G MIMO + Bluetooth
15		WiFi 5G SISO (Chain1)
16		WiFi 5G SISO (Chain0)
17		WiFi 5G MIMO
18		WiFi 2.4G SISO (Chain1)
19		WiFi 2.4G SISO (Chain0)
20		WiFi 2.4G MIMO/CDD
21		Bluetooth
22		WiFi 2.4G SISO (Chain0) + WiFi 5G SISO (Chain1)

General Note:

1. Simultaneous operation at maximum power levels when the device is neither against the body nor the head (i.e. in a mobile RF exposure condition) is addressed in Sporton's RF Exposure report FA0O1508-01B
2. This device WLAN 2.4GHz / 5.2GHz / 5.8GHz supports Hotspot operation and Bluetooth support tethering applications.
3. The worst case 5 GHz WLAN reported SAR for each configuration was used for SAR summation, regardless of whether the WLAN channel has WiFi Direct and Hotspot capability. Therefore, the following summations represent the absolute worst cases for simultaneous transmission with 5 GHz WLAN.
4. The Scaled SAR summation is calculated based on the same configuration and test position.
5. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
   i) Scalar SAR summation < 1.6W/kg.
   ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
   iii) If SPLSR ≤ 0.04, simultaneously transmission SAR measurement is not necessary.
   iv) Simultaneously transmission SAR measurement, and the reported multi-band SAR < 1.6W/kg.

16.1 5G NR + LTE + WLAN + BT Sim-Tx analysis

In 5G NR + LTE + WLAN + BT simultaneous transmission, 5G NR and LTE transmission are managed and controlled by Qualcomm® Smart Transmit, while the RF exposure from WLAN and BT radios is managed using legacy approach, i.e., through a fixed power back-off if needed.

Since WLAN and BT do not employ time-averaging, 1gSAR and 10gSAR measurement for WLAN and BT need to be conducted at their corresponding rated power following current FCC test procedures to determine reported SAR values.

Smart Transmit current implementation assumes hotspots from 5G NR and LTE are collocated. Therefore, for a total of 100% exposure margin, if LTE uses x%, then the exposure margin left for 5G NR is capped to (100-x)%. Thus, the compliance equation for LTE + 5G NR is

*x% * A + (100-x)% * B ≤ 1.0,*

Where, A is normalized reported time-averaged SAR exposure ratio from LTE, and A ≤ 1.0; B is normalized reported time-averaged exposure ratio from 5G NR (i.e., PD exposure for 5G FR2 or SAR exposure for 5G FR1), and B ≤1.0.

Let C = normalized reported SAR exposure ratio from WLAN+BT, then for compliance,

*x% * A + (100-x)% * B + C ≤ 1.0* (1)

x% * A + (100-x)% * B ≤ x% * max(A, B) + (100-x)% * max(A, B) ≤ max(A, B)

*x% * A + (100-x)% * B + C ≤ max(A, B) + C ≤ 1.0* (2)

if A + C ≤ 1.0 and B + C ≤ 1.0 can be proven, then “x% * A + (100-x)% * B + C ≤ 1.0”. Therefore simultaneous transmission analysis for 5G NR + LTE + WLAN + BT can be performed in two steps

Step 1: Prove total exposure ratio (TER) of LTE + WLAN + BT < 1
Step 2: Prove total exposure ratio (TER) of 5G NR + WLAN + BT < 1

16.2 Head Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	1+4+8 Summed 1g SAR (W/kg)	1+5+8 Summed 1g SAR (W/kg)	1+7+8 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	1+8 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Ant 4	2.4GHz WLAN Ant 3	5GHz WLAN Ant 4	5GHz WLAN Ant 3	2.4GHz WLAN Ant 4+3	5GHz WLAN Ant 4+3	Bluetooth Ant 4							
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)							
GSM850_Ant 0	Right Cheek	0.277	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.726**	**0.396**	**0.682**	**0.491**	**0.614**	**0.304**	**0.532**
	Right Tilted	0.165	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.632**	**0.246**	**0.666**	**0.286**	**0.871**	**0.207**	**0.294**
	Left Cheek	0.379	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.932**	**1.123**	**1.248**	**0.816**	**0.897**	**0.513**	**1.230**
	Left Tilted	0.189	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.959**	**0.459**	**0.977**	**0.265**	**0.525**	**0.275**	**0.610**
GSM1900_Ant 2	Right Cheek	0.087	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.536**	**0.206**	**0.492**	**0.301**	**0.424**	**0.114**	**0.342**
	Right Tilted	0.067	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.534**	**0.148**	**0.568**	**0.188**	**0.773**	**0.109**	**0.196**
	Left Cheek	0.140	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.693**	**0.884**	**1.009**	**0.577**	**0.658**	**0.274**	**0.991**
	Left Tilted	0.058	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.828**	**0.328**	**0.846**	**0.134**	**0.394**	**0.144**	**0.479**
WCDMA II_Ant 2	Right Cheek	0.214	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.663**	**0.333**	**0.619**	**0.428**	**0.551**	**0.241**	**0.469**
	Right Tilted	0.159	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.626**	**0.240**	**0.660**	**0.280**	**0.865**	**0.201**	**0.288**
	Left Cheek	0.323	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.876**	**1.067**	**1.192**	**0.760**	**0.841**	**0.457**	**1.174**
	Left Tilted	0.138	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.908**	**0.408**	**0.926**	**0.214**	**0.474**	**0.224**	**0.559**
WCDMA IV_Ant 2	Right Cheek	0.230	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.679**	**0.349**	**0.635**	**0.444**	**0.567**	**0.257**	**0.485**
	Right Tilted	0.142	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.609**	**0.223**	**0.643**	**0.263**	**0.848**	**0.184**	**0.271**
	Left Cheek	0.297	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.850**	**1.041**	**1.166**	**0.734**	**0.815**	**0.431**	**1.148**
	Left Tilted	0.151	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.921**	**0.421**	**0.939**	**0.227**	**0.487**	**0.237**	**0.572**
WCDMA V_Ant 0	Right Cheek	0.236	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.685**	**0.355**	**0.641**	**0.450**	**0.573**	**0.263**	**0.491**
	Right Tilted	0.148	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.615**	**0.229**	**0.649**	**0.269**	**0.854**	**0.190**	**0.277**
	Left Cheek	0.386	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.939**	**1.130**	**1.255**	**0.823**	**0.904**	**0.520**	**1.237**
	Left Tilted	0.173	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.943**	**0.443**	**0.961**	**0.249**	**0.509**	**0.259**	**0.594**
LTE Band 7_Ant 2	Right Cheek	0.519	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.968**	**0.638**	**0.924**	**0.733**	**0.856**	**0.546**	**0.774**
	Right Tilted	0.138	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.605**	**0.219**	**0.639**	**0.259**	**0.844**	**0.180**	**0.267**
	Left Cheek	0.342	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.895**	**1.086**	**1.211**	**0.779**	**0.860**	**0.476**	**1.193**
	Left Tilted	0.194	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.964**	**0.464**	**0.982**	**0.270**	**0.530**	**0.280**	**0.615**
LTE Band 12_Ant 0	Right Cheek	0.229	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.678**	**0.348**	**0.634**	**0.443**	**0.566**	**0.256**	**0.484**
	Right Tilted	0.160	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.627**	**0.241**	**0.661**	**0.281**	**0.866**	**0.202**	**0.289**
	Left Cheek	0.356	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.909**	**1.100**	**1.225**	**0.793**	**0.874**	**0.490**	**1.207**
	Left Tilted	0.225	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.995**	**0.495**	**1.013**	**0.301**	**0.561**	**0.311**	**0.646**
LTE Band 13_Ant 0	Right Cheek	0.207	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.656**	**0.326**	**0.612**	**0.421**	**0.544**	**0.234**	**0.462**
	Right Tilted	0.122	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.589**	**0.203**	**0.623**	**0.243**	**0.828**	**0.164**	**0.251**
	Left Cheek	0.350	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.903**	**1.094**	**1.219**	**0.787**	**0.868**	**0.484**	**1.201**
	Left Tilted	0.188	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.958**	**0.458**	**0.976**	**0.264**	**0.524**	**0.274**	**0.609**
LTE Band 14_Ant 0	Right Cheek	0.192	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.641**	**0.311**	**0.597**	**0.406**	**0.529**	**0.219**	**0.447**
	Right Tilted	0.120	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.587**	**0.201**	**0.621**	**0.241**	**0.826**	**0.162**	**0.249**
	Left Cheek	0.410	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.963**	**1.154**	**1.279**	**0.847**	**0.928**	**0.544**	**1.261**
	Left Tilted	0.194	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.964**	**0.464**	**0.982**	**0.270**	**0.530**	**0.280**	**0.615**
LTE Band 25_Ant 2	Right Cheek	0.384	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.833**	**0.503**	**0.789**	**0.598**	**0.721**	**0.411**	**0.639**
	Right Tilted	0.199	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.666**	**0.280**	**0.700**	**0.320**	**0.905**	**0.241**	**0.328**
	Left Cheek	0.289	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.842**	**1.033**	**1.158**	**0.726**	**0.807**	**0.423**	**1.140**
	Left Tilted	0.174	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.944**	**0.444**	**0.962**	**0.250**	**0.510**	**0.260**	**0.595**
LTE Band 26_Ant 0	Right Cheek	0.235	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.684**	**0.354**	**0.640**	**0.449**	**0.572**	**0.262**	**0.490**
	Right Tilted	0.133	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.600**	**0.214**	**0.634**	**0.254**	**0.839**	**0.175**	**0.262**
	Left Cheek	0.416	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.969**	**1.160**	**1.285**	**0.853**	**0.934**	**0.550**	**1.267**
	Left Tilted	0.177	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.947**	**0.447**	**0.965**	**0.253**	**0.513**	**0.263**	**0.598**
LTE Band 30_Ant 2	Right Cheek	0.254	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.703**	**0.373**	**0.659**	**0.468**	**0.591**	**0.281**	**0.509**
	Right Tilted	0.082	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.549**	**0.163**	**0.583**	**0.203**	**0.788**	**0.124**	**0.211**
	Left Cheek	0.150	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.703**	**0.894**	**1.019**	**0.587**	**0.668**	**0.284**	**1.001**
	Left Tilted	0.117	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.887**	**0.387**	**0.905**	**0.193**	**0.453**	**0.203**	**0.538**
LTE Band 41_Ant 2	Right Cheek	0.309	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.758**	**0.428**	**0.714**	**0.523**	**0.646**	**0.336**	**0.564**

	Right Tilted	0.091	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.558**	**0.172**	**0.592**	**0.212**	**0.797**	**0.133**	**0.220**
	Left Cheek	0.202	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.755**	**0.946**	**1.071**	**0.639**	**0.720**	**0.336**	**1.053**
	Left Tilted	0.193	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.963**	**0.463**	**0.981**	**0.269**	**0.529**	**0.279**	**0.614**
LTE Band 48_Ant 7	Right Cheek	0.231	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.680**	**0.350**	**0.636**	**0.445**	**0.568**	**0.258**	**0.486**
	Right Tilted	0.256	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.723**	**0.337**	**0.757**	**0.377**	**0.962**	**0.298**	**0.385**
	Left Cheek	0.471	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**1.024**	**1.215**	**1.340**	**0.908**	**0.989**	**0.605**	**1.322**
	Left Tilted	0.162	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.932**	**0.432**	**0.950**	**0.238**	**0.498**	**0.248**	**0.583**
LTE Band 66_Ant 2	Right Cheek	0.276	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.725**	**0.395**	**0.681**	**0.490**	**0.613**	**0.303**	**0.531**
	Right Tilted	0.212	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.679**	**0.293**	**0.713**	**0.333**	**0.918**	**0.254**	**0.341**
	Left Cheek	0.381	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.934**	**1.125**	**1.250**	**0.818**	**0.899**	**0.515**	**1.232**
	Left Tilted	0.183	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.953**	**0.453**	**0.971**	**0.259**	**0.519**	**0.269**	**0.604**
LTE Band 71_Ant 0	Right Cheek	0.232	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.681**	**0.351**	**0.637**	**0.446**	**0.569**	**0.259**	**0.487**
	Right Tilted	0.127	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.594**	**0.208**	**0.628**	**0.248**	**0.833**	**0.169**	**0.256**
	Left Cheek	0.318	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.871**	**1.062**	**1.187**	**0.755**	**0.836**	**0.452**	**1.169**
	Left Tilted	0.162	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.932**	**0.432**	**0.950**	**0.238**	**0.498**	**0.248**	**0.583**

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	1+4+8 Summed 1g SAR (W/kg)	1+5+8 Summed 1g SAR (W/kg)	1+7+8 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	1+8 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Ant 4	2.4GHz WLAN Ant 3	5GHz WLAN Ant 4	5GHz WLAN Ant 3	2.4GHz WLAN Ant 4+3	5GHz WLAN Ant 4+3	Bluetooth Ant 4							
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)							
GSM850_Ant 1	Right Cheek	0.826	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**1.275**	**0.945**	**1.231**	**1.040**	**0.853**	**0.853**	**1.081**
	Right Tilted	0.564	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**1.031**	**0.645**	**1.065**	**0.685**	**0.606**	**0.853**	**0.693**
	Left Cheek	0.420	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.973**	**1.164**	**1.289**	**0.857**	**0.554**	**0.853**	**1.271**
	Left Tilted	0.358	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**1.128**	**0.628**	**1.146**	**0.434**	**0.444**	**0.853**	**0.779**
GSM1900_Ant 0	Right Cheek	0.088	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.537**	**0.207**	**0.493**	**0.302**	**0.115**	**0.853**	**0.343**
	Right Tilted	0.095	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.562**	**0.176**	**0.596**	**0.216**	**0.137**	**0.853**	**0.224**
	Left Cheek	0.218	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.771**	**0.962**	**1.087**	**0.655**	**0.352**	**0.853**	**1.069**
	Left Tilted	0.091	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.861**	**0.361**	**0.879**	**0.167**	**0.177**	**0.853**	**0.512**
WCDMA II_Ant 0	Right Cheek	0.180	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.629**	**0.299**	**0.585**	**0.394**	**0.207**	**0.853**	**0.435**
	Right Tilted	0.149	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.616**	**0.230**	**0.650**	**0.270**	**0.191**	**0.853**	**0.278**
	Left Cheek	0.452	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**1.005**	**1.196**	**1.321**	**0.889**	**0.586**	**0.853**	**1.303**
	Left Tilted	0.118	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.888**	**0.388**	**0.906**	**0.194**	**0.204**	**0.853**	**0.539**
WCDMA IV_Ant 0	Right Cheek	0.299	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.748**	**0.418**	**0.704**	**0.513**	**0.326**	**0.853**	**0.554**
	Right Tilted	0.266	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.733**	**0.347**	**0.767**	**0.387**	**0.308**	**0.853**	**0.395**
	Left Cheek	0.595	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**1.148**	**1.339**	**1.464**	**1.032**	**0.729**	**0.853**	**1.446**
	Left Tilted	0.279	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**1.049**	**0.549**	**1.067**	**0.355**	**0.365**	**0.853**	**0.700**
WCDMA V_Ant 1	Right Cheek	0.967	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**1.416**	**1.086**	**1.372**	**1.181**	**0.994**	**0.853**	**1.222**
	Right Tilted	0.694	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**1.161**	**0.775**	**1.195**	**0.815**	**0.736**	**0.853**	**0.823**
	Left Cheek	0.583	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**1.136**	**1.327**	**1.452**	**1.020**	**0.717**	**0.853**	**1.434**
	Left Tilted	0.365	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**1.135**	**0.635**	**1.153**	**0.441**	**0.451**	**0.853**	**0.786**
LTE Band 7_Ant 0	Right Cheek	0.088	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.537**	**0.207**	**0.493**	**0.302**	**0.115**	**0.853**	**0.343**
	Right Tilted	0.068	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.535**	**0.149**	**0.569**	**0.189**	**0.110**	**0.853**	**0.197**
	Left Cheek	0.180	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.733**	**0.924**	**1.049**	**0.617**	**0.314**	**0.853**	**1.031**
	Left Tilted	0.056	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.826**	**0.326**	**0.844**	**0.132**	**0.142**	**0.853**	**0.477**
LTE Band 12_Ant 1	Right Cheek	0.896	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**1.345**	**1.015**	**1.301**	**1.110**	**0.923**	**0.853**	**1.151**
	Right Tilted	0.691	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**1.158**	**0.772**	**1.192**	**0.812**	**0.733**	**0.853**	**0.820**
	Left Cheek	0.407	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.960**	**1.151**	**1.276**	**0.844**	**0.541**	**0.853**	**1.258**
	Left Tilted	0.393	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**1.163**	**0.663**	**1.181**	**0.469**	**0.479**	**0.853**	**0.814**
LTE Band 13_Ant 1	Right Cheek	0.821	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**1.270**	**0.940**	**1.226**	**1.035**	**0.848**	**0.853**	**1.076**
	Right Tilted	0.653	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**1.120**	**0.734**	**1.154**	**0.774**	**0.695**	**0.853**	**0.782**
	Left Cheek	0.452	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**1.005**	**1.196**	**1.321**	**0.889**	**0.586**	**0.853**	**1.303**
	Left Tilted	0.400	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**1.170**	**0.670**	**1.188**	**0.476**	**0.486**	**0.853**	**0.821**

LTE Band 14_Ant 1	Right Cheek	0.766	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**1.215**	**0.885**	**1.171**	**0.980**	**0.793**	**0.853**	**1.021**
	Right Tilted	0.564	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**1.031**	**0.645**	**1.065**	**0.685**	**0.606**	**0.853**	**0.693**
	Left Cheek	0.385	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.938**	**1.129**	**1.254**	**0.822**	**0.519**	**0.853**	**1.236**
	Left Tilted	0.385	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**1.155**	**0.655**	**1.173**	**0.461**	**0.471**	**0.853**	**0.806**
LTE Band 25_Ant 0	Right Cheek	0.239	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.688**	**0.358**	**0.644**	**0.453**	**0.266**	**0.853**	**0.494**
	Right Tilted	0.252	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.719**	**0.333**	**0.753**	**0.373**	**0.294**	**0.853**	**0.381**
	Left Cheek	0.532	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**1.085**	**1.276**	**1.401**	**0.969**	**0.666**	**0.853**	**1.383**
	Left Tilted	0.257	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**1.027**	**0.527**	**1.045**	**0.333**	**0.343**	**0.853**	**0.678**
LTE Band 26_Ant 1	Right Cheek	0.893	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**1.342**	**1.012**	**1.298**	**1.107**	**0.920**	**0.853**	**1.148**
	Right Tilted	0.651	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**1.118**	**0.732**	**1.152**	**0.772**	**0.693**	**0.853**	**0.780**
	Left Cheek	0.473	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**1.026**	**1.217**	**1.342**	**0.910**	**0.607**	**0.853**	**1.324**
	Left Tilted	0.402	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**1.172**	**0.672**	**1.190**	**0.478**	**0.488**	**0.853**	**0.823**
LTE Band 30_Ant 0	Right Cheek	0.215	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.664**	**0.334**	**0.620**	**0.429**	**0.242**	**0.853**	**0.470**
	Right Tilted	0.143	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.610**	**0.224**	**0.644**	**0.264**	**0.185**	**0.853**	**0.272**
	Left Cheek	0.331	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.884**	**1.075**	**1.200**	**0.768**	**0.465**	**0.853**	**1.182**
	Left Tilted	0.149	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.919**	**0.419**	**0.937**	**0.225**	**0.235**	**0.853**	**0.570**
LTE Band 41_Ant 0	Right Cheek	0.043	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.492**	**0.162**	**0.448**	**0.257**	**0.070**	**0.853**	**0.298**
	Right Tilted	0.029	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.496**	**0.110**	**0.530**	**0.150**	**0.071**	**0.853**	**0.158**
	Left Cheek	0.120	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.673**	**0.864**	**0.989**	**0.557**	**0.254**	**0.853**	**0.971**
	Left Tilted	0.019	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.789**	**0.289**	**0.807**	**0.095**	**0.105**	**0.853**	**0.440**
LTE Band 48_Ant 2	Right Cheek	0.107	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.556**	**0.226**	**0.512**	**0.321**	**0.134**	**0.853**	**0.362**
	Right Tilted	0.037	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.504**	**0.118**	**0.538**	**0.158**	**0.079**	**0.853**	**0.166**
	Left Cheek	0.027	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.580**	**0.771**	**0.896**	**0.464**	**0.161**	**0.853**	**0.878**
	Left Tilted	0.006	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.776**	**0.276**	**0.794**	**0.082**	**0.092**	**0.853**	**0.427**
LTE Band 66_Ant 0	Right Cheek	0.232	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.681**	**0.351**	**0.637**	**0.446**	**0.259**	**0.853**	**0.487**
	Right Tilted	0.222	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.689**	**0.303**	**0.723**	**0.343**	**0.264**	**0.853**	**0.351**
	Left Cheek	0.487	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**1.040**	**1.231**	**1.356**	**0.924**	**0.621**	**0.853**	**1.338**
	Left Tilted	0.222	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.992**	**0.492**	**1.010**	**0.298**	**0.308**	**0.853**	**0.643**
LTE Band 71_Ant 1	Right Cheek	0.562	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**1.011**	**0.681**	**0.967**	**0.776**	**0.589**	**0.853**	**0.817**
	Right Tilted	0.425	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.892**	**0.506**	**0.926**	**0.546**	**0.467**	**0.853**	**0.554**
	Left Cheek	0.224	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.777**	**0.968**	**1.093**	**0.661**	**0.358**	**0.853**	**1.075**
	Left Tilted	0.212	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.982**	**0.482**	**1.000**	**0.288**	**0.298**	**0.853**	**0.633**

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	1+4+8 Summed 1g SAR (W/kg)	1+5+8 Summed 1g SAR (W/kg)	1+7+8 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	1+8 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Ant 4	2.4GHz WLAN Ant 3	5GHz WLAN Ant 4	5GHz WLAN Ant 3	2.4GHz WLAN Ant 4+3	5GHz WLAN Ant 4+3	Bluetooth Ant 4							
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)							
FR1 n5_Ant 0	Right Cheek	0.125	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.574**	**0.244**	**0.530**	**0.339**	**0.462**	**0.152**	**0.380**
	Right Tilted	0.075	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.542**	**0.156**	**0.576**	**0.196**	**0.781**	**0.117**	**0.204**
	Left Cheek	0.223	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.776**	**0.967**	**1.092**	**0.660**	**0.741**	**0.357**	**1.074**
	Left Tilted	0.092	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.862**	**0.362**	**0.880**	**0.168**	**0.428**	**0.178**	**0.513**
FR1 n5_Ant 1	Right Cheek	0.836	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**1.285**	**0.955**	**1.241**	**1.050**	**1.173**	**0.863**	**1.091**
	Right Tilted	0.681	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**1.148**	**0.762**	**1.182**	**0.802**	**1.387**	**0.723**	**0.810**
	Left Cheek	0.553	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**1.106**	**1.297**	**1.422**	**0.990**	**1.071**	**0.687**	**1.404**
	Left Tilted	0.517	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**1.287**	**0.787**	**1.305**	**0.593**	**0.853**	**0.603**	**0.938**
FR1 n77_Ant 7	Right Cheek	0.207	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.656**	**0.326**	**0.612**	**0.421**	**0.544**	**0.234**	**0.462**
	Right Tilted	0.200	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.667**	**0.281**	**0.701**	**0.321**	**0.906**	**0.242**	**0.329**
	Left Cheek	0.260	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.813**	**1.004**	**1.129**	**0.697**	**0.778**	**0.394**	**1.111**
	Left Tilted	0.161	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.931**	**0.431**	**0.949**	**0.237**	**0.497**	**0.247**	**0.582**
FR1 n77_Ant 2	Right Cheek	0.123	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.572**	**0.242**	**0.528**	**0.337**	**0.460**	**0.150**	**0.378**
	Right Tilted	0.065	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.532**	**0.146**	**0.566**	**0.186**	**0.771**	**0.107**	**0.194**
	Left Cheek	0.071	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.624**	**0.815**	**0.940**	**0.508**	**0.589**	**0.205**	**0.922**
	Left Tilted	0.051	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.821**	**0.321**	**0.839**	**0.127**	**0.387**	**0.137**	**0.472**
FR1 n78_Ant 7	Right Cheek	0.234	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.683**	**0.353**	**0.639**	**0.448**	**0.571**	**0.261**	**0.489**
	Right Tilted	0.226	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.693**	**0.307**	**0.727**	**0.347**	**0.932**	**0.268**	**0.355**
	Left Cheek	0.297	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.850**	**1.041**	**1.166**	**0.734**	**0.815**	**0.431**	**1.148**
	Left Tilted	0.153	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.923**	**0.423**	**0.941**	**0.229**	**0.489**	**0.239**	**0.574**
FR1 n78_Ant 2	Right Cheek	0.087	0.163	0.214	0.422	0.092	0.337	0.378	0.027	**0.536**	**0.206**	**0.492**	**0.301**	**0.424**	**0.114**	**0.342**
	Right Tilted	0.040	0.090	0.121	0.425	0.039	0.706	0.459	0.042	**0.507**	**0.121**	**0.541**	**0.161**	**0.746**	**0.082**	**0.169**
	Left Cheek	0.063	0.241	0.437	0.419	0.610	0.518	0.735	0.134	**0.616**	**0.807**	**0.932**	**0.500**	**0.581**	**0.197**	**0.914**
	Left Tilted	0.045	0.237	0.076	0.684	0.184	0.336	0.702	0.086	**0.815**	**0.315**	**0.833**	**0.121**	**0.381**	**0.131**	**0.466**

16.3 Hotspot Exposure Conditions

<Simultaneous Transmission is active_ WWAN ON>

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	1+4+8 Summed 1g SAR (W/kg)	1+5+8 Summed 1g SAR (W/kg)	1+7+8 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	1+8 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Ant 4	2.4GHz WLAN Ant 3	5GHz WLAN Ant 4	5GHz WLAN Ant 3	2.4GHz WLAN Ant 4+3	5GHz WLAN Ant 4+3	Bluetooth Ant 4							
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)							
GSM850_Ant 0	Front	0.340	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.514**	**0.452**	**0.509**	**0.480**	**0.561**	**0.398**	**0.582**
	Back	0.441	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.931**	**0.702**	**0.836**	**0.891**	**0.910**	**0.560**	**0.859**
	Left side	0.551		0.238		0.246	0.259	0.388		**0.551**	**0.797**	**0.939**	**0.789**	**0.810**	**0.551**	**0.797**
	Right side	0.284	0.178		0.359		0.113	0.347	0.056	**0.699**	**0.340**	**0.687**	**0.284**	**0.397**	**0.340**	**0.462**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.338								**0.338**	**0.338**	**0.338**	**0.338**	**0.338**	**0.338**	**0.338**
GSM1900_Ant 2	Front	0.387	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.561**	**0.499**	**0.556**	**0.527**	**0.608**	**0.445**	**0.629**
	Back	0.528	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**1.018**	**0.789**	**0.923**	**0.978**	**0.997**	**0.647**	**0.946**
	Left side	0.141		0.238		0.246	0.259	0.388		**0.141**	**0.387**	**0.529**	**0.379**	**0.400**	**0.141**	**0.387**
	Right side	0.249	0.178		0.359		0.113	0.347	0.056	**0.664**	**0.305**	**0.652**	**0.249**	**0.362**	**0.305**	**0.427**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.786								**0.786**	**0.786**	**0.786**	**0.786**	**0.786**	**0.786**	**0.786**
WCDMA II_Ant 2	Front	0.574	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.748**	**0.686**	**0.743**	**0.714**	**0.795**	**0.632**	**0.816**
	Back	0.853	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**1.343**	**1.114**	**1.248**	**1.303**	**1.322**	**0.972**	**1.271**
	Left side	0.192		0.238		0.246	0.259	0.388		**0.192**	**0.438**	**0.580**	**0.430**	**0.451**	**0.192**	**0.438**
	Right side	0.384	0.178		0.359		0.113	0.347	0.056	**0.799**	**0.440**	**0.787**	**0.384**	**0.497**	**0.440**	**0.562**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.832								**0.832**	**0.832**	**0.832**	**0.832**	**0.832**	**0.832**	**0.832**
WCDMA IV_Ant 2	Front	0.590	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.764**	**0.702**	**0.759**	**0.730**	**0.811**	**0.648**	**0.832**
	Back	0.612	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**1.102**	**0.873**	**1.007**	**1.062**	**1.081**	**0.731**	**1.030**
	Left side	0.124		0.238		0.246	0.259	0.388		**0.124**	**0.370**	**0.512**	**0.362**	**0.383**	**0.124**	**0.370**
	Right side	0.487	0.178		0.359		0.113	0.347	0.056	**0.902**	**0.543**	**0.890**	**0.487**	**0.600**	**0.543**	**0.665**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.725								**0.725**	**0.725**	**0.725**	**0.725**	**0.725**	**0.725**	**0.725**
WCDMA V_Ant 0	Front	0.330	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.504**	**0.442**	**0.499**	**0.470**	**0.551**	**0.388**	**0.572**
	Back	0.455	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.945**	**0.716**	**0.850**	**0.905**	**0.924**	**0.574**	**0.873**
	Left side	0.507		0.238		0.246	0.259	0.388		**0.507**	**0.753**	**0.895**	**0.745**	**0.766**	**0.507**	**0.753**
	Right side	0.279	0.178		0.359		0.113	0.347	0.056	**0.694**	**0.335**	**0.682**	**0.279**	**0.392**	**0.335**	**0.457**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.296								**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**	**0.296**
LTE Band 7_Ant 2	Front	0.518	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.692**	**0.630**	**0.687**	**0.658**	**0.739**	**0.576**	**0.760**
	Back	0.676	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**1.166**	**0.937**	**1.071**	**1.126**	**1.145**	**0.795**	**1.094**
	Left side	0.126		0.238		0.246	0.259	0.388		**0.126**	**0.372**	**0.514**	**0.364**	**0.385**	**0.126**	**0.372**
	Right side	0.298	0.178		0.359		0.113	0.347	0.056	**0.713**	**0.354**	**0.701**	**0.298**	**0.411**	**0.354**	**0.476**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.795								**0.795**	**0.795**	**0.795**	**0.795**	**0.795**	**0.795**	**0.795**
LTE Band 12_Ant 0	Front	0.349	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.523**	**0.461**	**0.518**	**0.489**	**0.570**	**0.407**	**0.591**
	Back	0.470	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.960**	**0.731**	**0.865**	**0.920**	**0.939**	**0.589**	**0.888**
	Left side	0.453		0.238		0.246	0.259	0.388		**0.453**	**0.699**	**0.841**	**0.691**	**0.712**	**0.453**	**0.699**
	Right side	0.281	0.178		0.359		0.113	0.347	0.056	**0.696**	**0.337**	**0.684**	**0.281**	**0.394**	**0.337**	**0.459**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.128								**0.128**	**0.128**	**0.128**	**0.128**	**0.128**	**0.128**	**0.128**
LTE Band 13_Ant 0	Front	0.310	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.484**	**0.422**	**0.479**	**0.450**	**0.531**	**0.368**	**0.552**
	Back	0.413	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.903**	**0.674**	**0.808**	**0.863**	**0.882**	**0.532**	**0.831**
	Left side	0.335		0.238		0.246	0.259	0.388		**0.335**	**0.581**	**0.723**	**0.573**	**0.594**	**0.335**	**0.581**
	Right side	0.290	0.178		0.359		0.113	0.347	0.056	**0.705**	**0.346**	**0.693**	**0.290**	**0.403**	**0.346**	**0.468**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.161								**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**	**0.161**

LTE Band 14_Ant 0	Front	0.336	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.510**	**0.448**	**0.505**	**0.476**	**0.557**	**0.394**	**0.578**
	Back	0.431	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.921**	**0.692**	**0.826**	**0.881**	**0.900**	**0.550**	**0.849**
	Left side	0.354		0.238		0.246	0.259	0.388		**0.354**	**0.600**	**0.742**	**0.592**	**0.613**	**0.354**	**0.600**
	Right side	0.298	0.178		0.359		0.113	0.347	0.056	**0.713**	**0.354**	**0.701**	**0.298**	**0.411**	**0.354**	**0.476**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.187								**0.187**	**0.187**	**0.187**	**0.187**	**0.187**	**0.187**	**0.187**
LTE Band 25_Ant 2	Front	0.583	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.757**	**0.695**	**0.752**	**0.723**	**0.804**	**0.641**	**0.825**
	Back	0.710	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**1.200**	**0.971**	**1.105**	**1.160**	**1.179**	**0.829**	**1.128**
	Left side	0.105		0.238		0.246	0.259	0.388		**0.105**	**0.351**	**0.493**	**0.343**	**0.364**	**0.105**	**0.351**
	Right side	0.299	0.178		0.359		0.113	0.347	0.056	**0.714**	**0.355**	**0.702**	**0.299**	**0.412**	**0.355**	**0.477**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.817								**0.817**	**0.817**	**0.817**	**0.817**	**0.817**	**0.817**	**0.817**
LTE Band 26_Ant 0	Front	0.300	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.474**	**0.412**	**0.469**	**0.440**	**0.521**	**0.358**	**0.542**
	Back	0.403	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.893**	**0.664**	**0.798**	**0.853**	**0.872**	**0.522**	**0.821**
	Left side	0.447		0.238		0.246	0.259	0.388		**0.447**	**0.693**	**0.835**	**0.685**	**0.706**	**0.447**	**0.693**
	Right side	0.234	0.178		0.359		0.113	0.347	0.056	**0.649**	**0.290**	**0.637**	**0.234**	**0.347**	**0.290**	**0.412**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.277								**0.277**	**0.277**	**0.277**	**0.277**	**0.277**	**0.277**	**0.277**
LTE Band 30_Ant 2	Front	0.644	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.818**	**0.756**	**0.813**	**0.784**	**0.865**	**0.702**	**0.886**
	Back	0.860	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**1.350**	**1.121**	**1.255**	**1.310**	**1.329**	**0.979**	**1.278**
	Left side	0.085		0.238		0.246	0.259	0.388		**0.085**	**0.331**	**0.473**	**0.323**	**0.344**	**0.085**	**0.331**
	Right side	0.408	0.178		0.359		0.113	0.347	0.056	**0.823**	**0.464**	**0.811**	**0.408**	**0.521**	**0.464**	**0.586**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.734								**0.734**	**0.734**	**0.734**	**0.734**	**0.734**	**0.734**	**0.734**
LTE Band 41_Ant 2	Front	0.616	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.790**	**0.728**	**0.785**	**0.756**	**0.837**	**0.674**	**0.858**
	Back	0.907	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**1.397**	**1.168**	**1.302**	**1.357**	**1.376**	**1.026**	**1.325**
	Left side	0.125		0.238		0.246	0.259	0.388		**0.125**	**0.371**	**0.513**	**0.363**	**0.384**	**0.125**	**0.371**
	Right side	0.415	0.178		0.359		0.113	0.347	0.056	**0.830**	**0.471**	**0.818**	**0.415**	**0.528**	**0.471**	**0.593**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.831								**0.831**	**0.831**	**0.831**	**0.831**	**0.831**	**0.831**	**0.831**
LTE Band 48_Ant 7	Front	0.278	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.452**	**0.390**	**0.447**	**0.418**	**0.499**	**0.336**	**0.520**
	Back	0.903	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**1.393**	**1.164**	**1.298**	**1.353**	**1.372**	**1.022**	**1.321**
	Left side	0.331		0.238		0.246	0.259	0.388		**0.331**	**0.577**	**0.719**	**0.569**	**0.590**	**0.331**	**0.577**
	Right side	0.041	0.178		0.359		0.113	0.347	0.056	**0.456**	**0.097**	**0.444**	**0.041**	**0.154**	**0.097**	**0.219**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.423								**0.423**	**0.423**	**0.423**	**0.423**	**0.423**	**0.423**	**0.423**
LTE Band 66_Ant 2	Front	0.717	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.891**	**0.829**	**0.886**	**0.857**	**0.938**	**0.775**	**0.959**
	Back	0.828	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**1.318**	**1.089**	**1.223**	**1.278**	**1.297**	**0.947**	**1.246**
	Left side	0.185		0.238		0.246	0.259	0.388		**0.185**	**0.431**	**0.573**	**0.423**	**0.444**	**0.185**	**0.431**
	Right side	0.498	0.178		0.359		0.113	0.347	0.056	**0.913**	**0.554**	**0.901**	**0.498**	**0.611**	**0.554**	**0.676**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.889								**0.889**	**0.889**	**0.889**	**0.889**	**0.889**	**0.889**	**0.889**
LTE Band 71_Ant 0	Front	0.278	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.452**	**0.390**	**0.447**	**0.418**	**0.499**	**0.336**	**0.520**
	Back	0.448	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.938**	**0.709**	**0.843**	**0.898**	**0.917**	**0.567**	**0.866**
	Left side	0.349		0.238		0.246	0.259	0.388		**0.349**	**0.595**	**0.737**	**0.587**	**0.608**	**0.349**	**0.595**
	Right side	0.227	0.178		0.359		0.113	0.347	0.056	**0.642**	**0.283**	**0.630**	**0.227**	**0.340**	**0.283**	**0.405**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.086								**0.086**	**0.086**	**0.086**	**0.086**	**0.086**	**0.086**	**0.086**

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	1+4+8 Summed 1g SAR (W/kg)	1+5+8 Summed 1g SAR (W/kg)	1+7+8 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	1+8 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Ant 4	2.4GHz WLAN Ant 3	5GHz WLAN Ant 4	5GHz WLAN Ant 3	2.4GHz WLAN Ant 4+3	5GHz WLAN Ant 4+3	Bluetooth Ant 4							
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)							
GSM850_Ant 1	Front	0.197	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.371**	**0.309**	**0.366**	**0.337**	**0.418**	**0.255**	**0.439**
	Back	0.387	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.877**	**0.648**	**0.782**	**0.837**	**0.856**	**0.506**	**0.805**
	Left side	0.133		0.238		0.246	0.259	0.388		**0.133**	**0.379**	**0.521**	**0.371**	**0.392**	**0.133**	**0.379**
	Right side	0.128	0.178		0.359		0.113	0.347	0.056	**0.543**	**0.184**	**0.531**	**0.128**	**0.241**	**0.184**	**0.306**
	Top side	0.178	0.218		0.806		0.235	0.677	0.072	**1.056**	**0.250**	**0.927**	**0.178**	**0.413**	**0.250**	**0.396**
	Bottom side									**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
GSM1900_Ant 0	Front	0.222	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.396**	**0.334**	**0.391**	**0.362**	**0.443**	**0.280**	**0.464**
	Back	0.493	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.983**	**0.754**	**0.888**	**0.943**	**0.962**	**0.612**	**0.911**
	Left side	0.394		0.238		0.246	0.259	0.388		**0.394**	**0.640**	**0.782**	**0.632**	**0.653**	**0.394**	**0.640**
	Right side	0.027	0.178		0.359		0.113	0.347	0.056	**0.442**	**0.083**	**0.430**	**0.027**	**0.140**	**0.083**	**0.205**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.223								**0.223**	**0.223**	**0.223**	**0.223**	**0.223**	**0.223**	**0.223**
WCDMA II_Ant 0	Front	0.518	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.692**	**0.630**	**0.687**	**0.658**	**0.739**	**0.576**	**0.760**
	Back	0.839	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**1.329**	**1.100**	**1.234**	**1.289**	**1.308**	**0.958**	**1.257**
	Left side	0.739		0.238		0.246	0.259	0.388		**0.739**	**0.985**	**1.127**	**0.977**	**0.998**	**0.739**	**0.985**
	Right side	0.016	0.178		0.359		0.113	0.347	0.056	**0.431**	**0.072**	**0.419**	**0.016**	**0.129**	**0.072**	**0.194**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.478								**0.478**	**0.478**	**0.478**	**0.478**	**0.478**	**0.478**	**0.478**
WCDMA IV_Ant 0	Front	0.365	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.539**	**0.477**	**0.534**	**0.505**	**0.586**	**0.423**	**0.607**
	Back	0.906	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**1.396**	**1.167**	**1.301**	**1.356**	**1.375**	**1.025**	**1.324**
	Left side	0.907		0.238		0.246	0.259	0.388		**0.907**	**1.153**	**1.295**	**1.145**	**1.166**	**0.907**	**1.153**
	Right side	0.010	0.178		0.359		0.113	0.347	0.056	**0.425**	**0.066**	**0.413**	**0.010**	**0.123**	**0.066**	**0.188**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.523								**0.523**	**0.523**	**0.523**	**0.523**	**0.523**	**0.523**	**0.523**
WCDMA V_Ant 1	Front	0.181	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.355**	**0.293**	**0.350**	**0.321**	**0.402**	**0.239**	**0.423**
	Back	0.398	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.888**	**0.659**	**0.793**	**0.848**	**0.867**	**0.517**	**0.816**
	Left side	0.194		0.238		0.246	0.259	0.388		**0.194**	**0.440**	**0.582**	**0.432**	**0.453**	**0.194**	**0.440**
	Right side	0.169	0.178		0.359		0.113	0.347	0.056	**0.584**	**0.225**	**0.572**	**0.169**	**0.282**	**0.225**	**0.347**
	Top side	0.216	0.218		0.806		0.235	0.677	0.072	**1.094**	**0.288**	**0.965**	**0.216**	**0.451**	**0.288**	**0.434**
	Bottom side									**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
LTE Band 7_Ant 0	Front	0.177	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.351**	**0.289**	**0.346**	**0.317**	**0.398**	**0.235**	**0.419**
	Back	0.337	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.827**	**0.598**	**0.732**	**0.787**	**0.806**	**0.456**	**0.755**
	Left side	0.531		0.238		0.246	0.259	0.388		**0.531**	**0.777**	**0.919**	**0.769**	**0.790**	**0.531**	**0.777**
	Right side	0.036	0.178		0.359		0.113	0.347	0.056	**0.451**	**0.092**	**0.439**	**0.036**	**0.149**	**0.092**	**0.214**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.217								**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**	**0.217**
LTE Band 12_Ant 1	Front	0.259	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.433**	**0.371**	**0.428**	**0.399**	**0.480**	**0.317**	**0.501**
	Back	0.346	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.836**	**0.607**	**0.741**	**0.796**	**0.815**	**0.465**	**0.764**
	Left side	0.464		0.238		0.246	0.259	0.388		**0.464**	**0.710**	**0.852**	**0.702**	**0.723**	**0.464**	**0.710**
	Right side	0.193	0.178		0.359		0.113	0.347	0.056	**0.608**	**0.249**	**0.596**	**0.193**	**0.306**	**0.249**	**0.371**
	Top side	0.193	0.218		0.806		0.235	0.677	0.072	**1.071**	**0.265**	**0.942**	**0.193**	**0.428**	**0.265**	**0.411**
	Bottom side									**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
LTE Band 13_Ant 1	Front	0.188	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.362**	**0.300**	**0.357**	**0.328**	**0.409**	**0.246**	**0.430**
	Back	0.341	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.831**	**0.602**	**0.736**	**0.791**	**0.810**	**0.460**	**0.759**
	Left side	0.235		0.238		0.246	0.259	0.388		**0.235**	**0.481**	**0.623**	**0.473**	**0.494**	**0.235**	**0.481**
	Right side	0.189	0.178		0.359		0.113	0.347	0.056	**0.604**	**0.245**	**0.592**	**0.189**	**0.302**	**0.245**	**0.367**
	Top side	0.218	0.218		0.806		0.235	0.677	0.072	**1.096**	**0.290**	**0.967**	**0.218**	**0.453**	**0.290**	**0.436**
	Bottom side									**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
LTE Band 14_Ant 1	Front	0.146	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.320**	**0.258**	**0.315**	**0.286**	**0.367**	**0.204**	**0.388**

	Back	0.351	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.841**	**0.612**	**0.746**	**0.801**	**0.820**	**0.470**	**0.769**
	Left side	0.207		0.238		0.246	0.259	0.388		**0.207**	**0.453**	**0.595**	**0.445**	**0.466**	**0.207**	**0.453**
	Right side	0.155	0.178		0.359		0.113	0.347	0.056	**0.570**	**0.211**	**0.558**	**0.155**	**0.268**	**0.211**	**0.333**
	Top side	0.172	0.218		0.806		0.235	0.677	0.072	**1.050**	**0.244**	**0.921**	**0.172**	**0.407**	**0.244**	**0.390**
	Bottom side									**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
LTE Band 25_Ant 0	Front	0.383	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.557**	**0.495**	**0.552**	**0.523**	**0.604**	**0.441**	**0.625**
	Back	0.631	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**1.121**	**0.892**	**1.026**	**1.081**	**1.100**	**0.750**	**1.049**
	Left side	0.987		0.238		0.246	0.259	0.388		**0.987**	**1.233**	**1.375**	**1.225**	**1.246**	**0.987**	**1.233**
	Right side	0.034	0.178		0.359		0.113	0.347	0.056	**0.449**	**0.090**	**0.437**	**0.034**	**0.147**	**0.090**	**0.212**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.333								**0.333**	**0.333**	**0.333**	**0.333**	**0.333**	**0.333**	**0.333**
LTE Band 26_Ant 1	Front	0.212	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.386**	**0.324**	**0.381**	**0.352**	**0.433**	**0.270**	**0.454**
	Back	0.389	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.879**	**0.650**	**0.784**	**0.839**	**0.858**	**0.508**	**0.807**
	Left side	0.167		0.238		0.246	0.259	0.388		**0.167**	**0.413**	**0.555**	**0.405**	**0.426**	**0.167**	**0.413**
	Right side	0.173	0.178		0.359		0.113	0.347	0.056	**0.588**	**0.229**	**0.576**	**0.173**	**0.286**	**0.229**	**0.351**
	Top side	0.261	0.218		0.806		0.235	0.677	0.072	**1.139**	**0.333**	**1.010**	**0.261**	**0.496**	**0.333**	**0.479**
	Bottom side									**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
LTE Band 30_Ant 0	Front	0.563	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.737**	**0.675**	**0.732**	**0.703**	**0.784**	**0.621**	**0.805**
	Back	0.871	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**1.361**	**1.132**	**1.266**	**1.321**	**1.340**	**0.990**	**1.289**
	Left side	0.608		0.238		0.246	0.259	0.388		**0.608**	**0.854**	**0.996**	**0.846**	**0.867**	**0.608**	**0.854**
	Right side	0.061	0.178		0.359		0.113	0.347	0.056	**0.476**	**0.117**	**0.464**	**0.061**	**0.174**	**0.117**	**0.239**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.458								**0.458**	**0.458**	**0.458**	**0.458**	**0.458**	**0.458**	**0.458**
LTE Band 41_Ant 0	Front	0.209	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.383**	**0.321**	**0.378**	**0.349**	**0.430**	**0.267**	**0.451**
	Back	0.157	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.647**	**0.418**	**0.552**	**0.607**	**0.626**	**0.276**	**0.575**
	Left side	0.308		0.238		0.246	0.259	0.388		**0.308**	**0.554**	**0.696**	**0.546**	**0.567**	**0.308**	**0.554**
	Right side	0.012	0.178		0.359		0.113	0.347	0.056	**0.427**	**0.068**	**0.415**	**0.012**	**0.125**	**0.068**	**0.190**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.099								**0.099**	**0.099**	**0.099**	**0.099**	**0.099**	**0.099**	**0.099**
LTE Band 48_Ant 2	Front	0.352	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.526**	**0.464**	**0.521**	**0.492**	**0.573**	**0.410**	**0.594**
	Back	0.825	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**1.315**	**1.086**	**1.220**	**1.275**	**1.294**	**0.944**	**1.243**
	Left side	0.076		0.238		0.246	0.259	0.388		**0.076**	**0.322**	**0.464**	**0.314**	**0.335**	**0.076**	**0.322**
	Right side	0.625	0.178		0.359		0.113	0.347	0.056	**1.040**	**0.681**	**1.028**	**0.625**	**0.738**	**0.681**	**0.803**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.667								**0.667**	**0.667**	**0.667**	**0.667**	**0.667**	**0.667**	**0.667**
LTE Band 66_Ant 0	Front	0.388	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.562**	**0.500**	**0.557**	**0.528**	**0.609**	**0.446**	**0.630**
	Back	0.842	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**1.332**	**1.103**	**1.237**	**1.292**	**1.311**	**0.961**	**1.260**
	Left side	0.704		0.238		0.246	0.259	0.388		**0.704**	**0.950**	**1.092**	**0.942**	**0.963**	**0.704**	**0.950**
	Right side	0.063	0.178		0.359		0.113	0.347	0.056	**0.478**	**0.119**	**0.466**	**0.063**	**0.176**	**0.119**	**0.241**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.494								**0.494**	**0.494**	**0.494**	**0.494**	**0.494**	**0.494**	**0.494**
LTE Band 71_Ant 1	Front	0.144	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.318**	**0.256**	**0.313**	**0.284**	**0.365**	**0.202**	**0.386**
	Back	0.227	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.717**	**0.488**	**0.622**	**0.677**	**0.696**	**0.346**	**0.645**
	Left side	0.357		0.238		0.246	0.259	0.388		**0.357**	**0.603**	**0.745**	**0.595**	**0.616**	**0.357**	**0.603**
	Right side	0.116	0.178		0.359		0.113	0.347	0.056	**0.531**	**0.172**	**0.519**	**0.116**	**0.229**	**0.172**	**0.294**
	Top side	0.101	0.218		0.806		0.235	0.677	0.072	**0.979**	**0.173**	**0.850**	**0.101**	**0.336**	**0.173**	**0.319**
	Bottom side									**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	1+4+8 Summed 1g SAR (W/kg)	1+5+8 Summed 1g SAR (W/kg)	1+7+8 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	1+8 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Ant 4	2.4GHz WLAN Ant 3	5GHz WLAN Ant 4	5GHz WLAN Ant 3	2.4GHz WLAN Ant 4+3	5GHz WLAN Ant 4+3	Bluetooth Ant 4							
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)							
FR1 n5_Ant 0	Front	0.144	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.318**	**0.256**	**0.313**	**0.284**	**0.365**	**0.202**	**0.386**
	Back	0.359	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.849**	**0.620**	**0.754**	**0.809**	**0.828**	**0.478**	**0.777**
	Left side	0.211		0.238		0.246	0.259	0.388		**0.211**	**0.457**	**0.599**	**0.449**	**0.470**	**0.211**	**0.457**
	Right side	0.096	0.178		0.359		0.113	0.347	0.056	**0.511**	**0.152**	**0.499**	**0.096**	**0.209**	**0.152**	**0.274**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.200								**0.200**	**0.200**	**0.200**	**0.200**	**0.200**	**0.200**	**0.200**
FR1 n5_Ant 1	Front	0.216	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.390**	**0.328**	**0.385**	**0.356**	**0.437**	**0.274**	**0.458**
	Back	0.374	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.864**	**0.635**	**0.769**	**0.824**	**0.843**	**0.493**	**0.792**
	Left side	0.166		0.238		0.246	0.259	0.388		**0.166**	**0.412**	**0.554**	**0.404**	**0.425**	**0.166**	**0.412**
	Right side	0.172	0.178		0.359		0.113	0.347	0.056	**0.587**	**0.228**	**0.575**	**0.172**	**0.285**	**0.228**	**0.350**
	Top side	0.271	0.218		0.806		0.235	0.677	0.072	**1.149**	**0.343**	**1.020**	**0.271**	**0.506**	**0.343**	**0.489**
	Bottom side									**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
FR1 n77_Ant 7	Front	0.253	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.427**	**0.365**	**0.422**	**0.393**	**0.474**	**0.311**	**0.495**
	Back	0.587	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**1.077**	**0.848**	**0.982**	**1.037**	**1.056**	**0.706**	**1.005**
	Left side	0.429		0.238		0.246	0.259	0.388		**0.429**	**0.675**	**0.817**	**0.667**	**0.688**	**0.429**	**0.675**
	Right side	0.002	0.178		0.359		0.113	0.347	0.056	**0.417**	**0.058**	**0.405**	**0.002**	**0.115**	**0.058**	**0.180**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.244								**0.244**	**0.244**	**0.244**	**0.244**	**0.244**	**0.244**	**0.244**
FR1 n77_Ant 2	Front	0.259	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.433**	**0.371**	**0.428**	**0.399**	**0.480**	**0.317**	**0.501**
	Back	0.192	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**0.682**	**0.453**	**0.587**	**0.642**	**0.661**	**0.311**	**0.610**
	Left side	0.100		0.238		0.246	0.259	0.388		**0.100**	**0.346**	**0.488**	**0.338**	**0.359**	**0.100**	**0.346**
	Right side	0.236	0.178		0.359		0.113	0.347	0.056	**0.651**	**0.292**	**0.639**	**0.236**	**0.349**	**0.292**	**0.414**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.086								**0.086**	**0.086**	**0.086**	**0.086**	**0.086**	**0.086**	**0.086**
FR1 n78_Ant 7	Front	0.293	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.467**	**0.405**	**0.462**	**0.433**	**0.514**	**0.351**	**0.535**
	Back	0.771	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**1.261**	**1.032**	**1.166**	**1.221**	**1.240**	**0.890**	**1.189**
	Left side	0.379		0.238		0.246	0.259	0.388		**0.379**	**0.625**	**0.767**	**0.617**	**0.638**	**0.379**	**0.625**
	Right side	0.002	0.178		0.359		0.113	0.347	0.056	**0.417**	**0.058**	**0.405**	**0.002**	**0.115**	**0.058**	**0.180**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.357								**0.357**	**0.357**	**0.357**	**0.357**	**0.357**	**0.357**	**0.357**
FR1 n78_Ant 2	Front	0.338	0.188	0.140	0.116	0.054	0.221	0.111	0.058	**0.512**	**0.450**	**0.507**	**0.478**	**0.559**	**0.396**	**0.580**
	Back	0.563	0.276	0.450	0.371	0.142	0.469	0.276	0.119	**1.053**	**0.824**	**0.958**	**1.013**	**1.032**	**0.682**	**0.981**
	Left side	0.072		0.238		0.246	0.259	0.388		**0.072**	**0.318**	**0.460**	**0.310**	**0.331**	**0.072**	**0.318**
	Right side	0.403	0.178		0.359		0.113	0.347	0.056	**0.818**	**0.459**	**0.806**	**0.403**	**0.516**	**0.459**	**0.581**
	Top side		0.218		0.806		0.235	0.677	0.072	**0.878**	**0.072**	**0.749**	**0.000**	**0.235**	**0.072**	**0.218**
	Bottom side	0.361								**0.361**	**0.361**	**0.361**	**0.361**	**0.361**	**0.361**	**0.361**

16.4 Body-Worn Accessory Exposure Conditions

<Standalone_ WWAN OFF>

Exposure Position	1	2	3	4	5	6	7	1+4 Summed 1g SAR (W/kg)	3+7 Summed 1g SAR (W/kg)	4+7 Summed 1g SAR (W/kg)	6+7 Summed 1g SAR (W/kg)
	2.4GHz WLAN Ant 4	2.4GHz WLAN Ant 3	5GHz WLAN Ant 4	5GHz WLAN Ant 3	2.4GHz WLAN Ant 4+3	5GHz WLAN Ant 4+3	Bluetooth Ant 4				
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)				
Front	0.188	0.140	0.114	0.105	0.221	0.091	0.058	**0.293**	**0.172**	**0.163**	**0.149**
Back	0.276	0.450	0.371	0.316	0.469	0.276	0.119	**0.592**	**0.490**	**0.435**	**0.395**

<Simultaneous Transmission is active_ WWAN ON>

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	1+4+8 Summed 1g SAR (W/kg)	1+5+8 Summed 1g SAR (W/kg)	1+7+8 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	1+8 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Ant 4	2.4GHz WLAN Ant 3	5GHz WLAN Ant 4	5GHz WLAN Ant 3	2.4GHz WLAN Ant 4+3	5GHz WLAN Ant 4+3	Bluetooth Ant 4							
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)							
GSM850_Ant 0	Front	0.340	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.512**	**0.446**	**0.489**	**0.480**	**0.561**	**0.398**	**0.576**
	Back	0.528	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.018**	**0.831**	**0.923**	**0.978**	**0.997**	**0.647**	**0.988**
GSM1900_Ant 2	Front	0.387	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.559**	**0.493**	**0.536**	**0.527**	**0.608**	**0.445**	**0.623**
	Back	0.595	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.085**	**0.898**	**0.990**	**1.045**	**1.064**	**0.714**	**1.055**
WCDMA II_Ant 2	Front	0.574	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.746**	**0.680**	**0.723**	**0.714**	**0.795**	**0.632**	**0.810**
	Back	0.853	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.343**	**1.156**	**1.248**	**1.303**	**1.322**	**0.972**	**1.313**
WCDMA IV_Ant 2	Front	0.618	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.790**	**0.724**	**0.767**	**0.758**	**0.839**	**0.676**	**0.854**
	Back	0.711	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.201**	**1.014**	**1.106**	**1.161**	**1.180**	**0.830**	**1.171**
WCDMA V_Ant 0	Front	0.330	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.502**	**0.436**	**0.479**	**0.470**	**0.551**	**0.388**	**0.566**
	Back	0.468	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.958**	**0.771**	**0.863**	**0.918**	**0.937**	**0.587**	**0.928**
LTE Band 7_Ant 2	Front	0.518	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.690**	**0.624**	**0.667**	**0.658**	**0.739**	**0.576**	**0.754**
	Back	0.751	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.241**	**1.054**	**1.146**	**1.201**	**1.220**	**0.870**	**1.211**
LTE Band 12_Ant 0	Front	0.349	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.521**	**0.455**	**0.498**	**0.489**	**0.570**	**0.407**	**0.585**
	Back	0.470	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.960**	**0.773**	**0.865**	**0.920**	**0.939**	**0.589**	**0.930**
LTE Band 13_Ant 0	Front	0.310	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.482**	**0.416**	**0.459**	**0.450**	**0.531**	**0.368**	**0.546**
	Back	0.413	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.903**	**0.716**	**0.808**	**0.863**	**0.882**	**0.532**	**0.873**
LTE Band 14_Ant 0	Front	0.336	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.508**	**0.442**	**0.485**	**0.476**	**0.557**	**0.394**	**0.572**
	Back	0.431	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.921**	**0.734**	**0.826**	**0.881**	**0.900**	**0.550**	**0.891**
LTE Band 25_Ant 2	Front	0.639	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.811**	**0.745**	**0.788**	**0.779**	**0.860**	**0.697**	**0.875**
	Back	0.778	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.268**	**1.081**	**1.173**	**1.228**	**1.247**	**0.897**	**1.238**
LTE Band 26_Ant 0	Front	0.300	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.472**	**0.406**	**0.449**	**0.440**	**0.521**	**0.358**	**0.536**
	Back	0.470	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.960**	**0.773**	**0.865**	**0.920**	**0.939**	**0.589**	**0.930**
LTE Band 30_Ant 2	Front	0.644	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.816**	**0.750**	**0.793**	**0.784**	**0.865**	**0.702**	**0.880**
	Back	0.860	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.350**	**1.163**	**1.255**	**1.310**	**1.329**	**0.979**	**1.320**
LTE Band 41_Ant 2	Front	0.616	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.788**	**0.722**	**0.765**	**0.756**	**0.837**	**0.674**	**0.852**
	Back	0.907	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.397**	**1.210**	**1.302**	**1.357**	**1.376**	**1.026**	**1.367**
LTE Band 48_Ant 7	Front	0.278	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.450**	**0.384**	**0.427**	**0.418**	**0.499**	**0.336**	**0.514**
	Back	0.903	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.393**	**1.206**	**1.298**	**1.353**	**1.372**	**1.022**	**1.363**
LTE Band 66_Ant 2	Front	0.717	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.889**	**0.823**	**0.866**	**0.857**	**0.938**	**0.775**	**0.953**
	Back	0.828	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.318**	**1.131**	**1.223**	**1.278**	**1.297**	**0.947**	**1.288**
LTE Band 71_Ant 0	Front	0.278	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.450**	**0.384**	**0.427**	**0.418**	**0.499**	**0.336**	**0.514**
	Back	0.448	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.938**	**0.751**	**0.843**	**0.898**	**0.917**	**0.567**	**0.908**

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	1+4+8 Summed 1g SAR (W/kg)	1+5+8 Summed 1g SAR (W/kg)	1+7+8 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	1+8 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Ant 4	2.4GHz WLAN Ant 3	5GHz WLAN Ant 4	5GHz WLAN Ant 3	2.4GHz WLAN Ant 4+3	5GHz WLAN Ant 4+3	Bluetooth Ant 4							
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)							
GSM850_Ant 1	Front	0.197	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.369**	**0.303**	**0.346**	**0.337**	**0.418**	**0.255**	**0.433**
	Back	0.387	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.877**	**0.690**	**0.782**	**0.837**	**0.856**	**0.506**	**0.847**
GSM1900_Ant 0	Front	0.222	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.394**	**0.328**	**0.371**	**0.362**	**0.443**	**0.280**	**0.458**
	Back	0.493	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.983**	**0.796**	**0.888**	**0.943**	**0.962**	**0.612**	**0.953**
WCDMA II_Ant 0	Front	0.518	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.690**	**0.624**	**0.667**	**0.658**	**0.739**	**0.576**	**0.754**
	Back	0.839	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.329**	**1.142**	**1.234**	**1.289**	**1.308**	**0.958**	**1.299**
WCDMA IV_Ant 0	Front	0.365	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.537**	**0.471**	**0.514**	**0.505**	**0.586**	**0.423**	**0.601**
	Back	0.906	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.396**	**1.209**	**1.301**	**1.356**	**1.375**	**1.025**	**1.366**
WCDMA V_Ant 1	Front	0.181	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.353**	**0.287**	**0.330**	**0.321**	**0.402**	**0.239**	**0.417**
	Back	0.398	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.888**	**0.701**	**0.793**	**0.848**	**0.867**	**0.517**	**0.858**
LTE Band 7_Ant 0	Front	0.177	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.349**	**0.283**	**0.326**	**0.317**	**0.398**	**0.235**	**0.413**
	Back	0.337	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.827**	**0.640**	**0.732**	**0.787**	**0.806**	**0.456**	**0.797**
LTE Band 12_Ant 1	Front	0.259	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.431**	**0.365**	**0.408**	**0.399**	**0.480**	**0.317**	**0.495**
	Back	0.346	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.836**	**0.649**	**0.741**	**0.796**	**0.815**	**0.465**	**0.806**
LTE Band 13_Ant 1	Front	0.188	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.360**	**0.294**	**0.337**	**0.328**	**0.409**	**0.246**	**0.424**
	Back	0.341	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.831**	**0.644**	**0.736**	**0.791**	**0.810**	**0.460**	**0.801**
LTE Band 14_Ant 1	Front	0.146	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.318**	**0.252**	**0.295**	**0.286**	**0.367**	**0.204**	**0.382**
	Back	0.351	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.841**	**0.654**	**0.746**	**0.801**	**0.820**	**0.470**	**0.811**
LTE Band 25_Ant 0	Front	0.435	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.607**	**0.541**	**0.584**	**0.575**	**0.656**	**0.493**	**0.671**
	Back	0.859	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.349**	**1.162**	**1.254**	**1.309**	**1.328**	**0.978**	**1.319**
LTE Band 26_Ant 1	Front	0.212	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.384**	**0.318**	**0.361**	**0.352**	**0.433**	**0.270**	**0.448**
	Back	0.389	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.879**	**0.692**	**0.784**	**0.839**	**0.858**	**0.508**	**0.849**
LTE Band 30_Ant 0	Front	0.563	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.735**	**0.669**	**0.712**	**0.703**	**0.784**	**0.621**	**0.799**
	Back	0.871	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.361**	**1.174**	**1.266**	**1.321**	**1.340**	**0.990**	**1.331**
LTE Band 41_Ant 0	Front	0.079	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.251**	**0.185**	**0.228**	**0.219**	**0.300**	**0.137**	**0.315**
	Back	0.187	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.677**	**0.490**	**0.582**	**0.637**	**0.656**	**0.306**	**0.647**
LTE Band 48_Ant 2	Front	0.352	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.524**	**0.458**	**0.501**	**0.492**	**0.573**	**0.410**	**0.588**
	Back	0.825	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.315**	**1.128**	**1.220**	**1.275**	**1.294**	**0.944**	**1.285**
LTE Band 66_Ant 0	Front	0.388	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.560**	**0.494**	**0.537**	**0.528**	**0.609**	**0.446**	**0.624**
	Back	0.842	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.332**	**1.145**	**1.237**	**1.292**	**1.311**	**0.961**	**1.302**
LTE Band 71_Ant 1	Front	0.144	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.316**	**0.250**	**0.293**	**0.284**	**0.365**	**0.202**	**0.380**
	Back	0.261	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.751**	**0.564**	**0.656**	**0.711**	**0.730**	**0.380**	**0.721**

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	1+4+8 Summed 1g SAR (W/kg)	1+5+8 Summed 1g SAR (W/kg)	1+7+8 Summed 1g SAR (W/kg)	1+3 Summed 1g SAR (W/kg)	1+6 Summed 1g SAR (W/kg)	1+8 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)
		WWAN	2.4GHz WLAN Ant 4	2.4GHz WLAN Ant 3	5GHz WLAN Ant 4	5GHz WLAN Ant 3	2.4GHz WLAN Ant 4+3	5GHz WLAN Ant 4+3	Bluetooth Ant 4							
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)							
FR1 n5_Ant 0	Front	0.144	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.316**	**0.250**	**0.293**	**0.284**	**0.365**	**0.202**	**0.380**
	Back	0.359	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.849**	**0.662**	**0.754**	**0.809**	**0.828**	**0.478**	**0.819**
FR1 n5_Ant 1	Front	0.216	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.388**	**0.322**	**0.365**	**0.356**	**0.437**	**0.274**	**0.452**
	Back	0.374	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.864**	**0.677**	**0.769**	**0.824**	**0.843**	**0.493**	**0.834**
FR1 n77_Ant 7	Front	0.253	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.425**	**0.359**	**0.402**	**0.393**	**0.474**	**0.311**	**0.489**
	Back	0.587	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.077**	**0.890**	**0.982**	**1.037**	**1.056**	**0.706**	**1.047**
FR1 n77_Ant 2	Front	0.259	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.431**	**0.365**	**0.408**	**0.399**	**0.480**	**0.317**	**0.495**
	Back	0.192	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**0.682**	**0.495**	**0.587**	**0.642**	**0.661**	**0.311**	**0.652**
FR1 n78_Ant 7	Front	0.293	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.465**	**0.399**	**0.442**	**0.433**	**0.514**	**0.351**	**0.529**
	Back	0.771	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.261**	**1.074**	**1.166**	**1.221**	**1.240**	**0.890**	**1.231**
FR1 n78_Ant 2	Front	0.338	0.188	0.140	0.114	0.048	0.221	0.091	0.058	**0.510**	**0.444**	**0.487**	**0.478**	**0.559**	**0.396**	**0.574**
	Back	0.563	0.276	0.450	0.371	0.184	0.469	0.276	0.119	**1.053**	**0.866**	**0.958**	**1.013**	**1.032**	**0.682**	**1.023**

17. Supplemental Antenna tuner tests results

General Note:

1. This device implements antenna tuning techniques in the several frequency band and list as below. SAR test proposal was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing and this design will provide the highest power at different user scenarios and would not influence to the antenna characteristics other than impedance matching.
2. The following test procedure was followed to demonstrate that the SAR results in this report represent the appropriate SAR test conditions. For bands with dynamic tuning implemented, SAR will be measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. Additional single point SAR time-sweep measurements will be evaluated for other tuner states to determine that the other tuner configurations would result in equivalent or lower SAR values.
3. To evaluate all of the tuner states, the 144 tuner states are divided evenly among band, mode and exposure combinations so that at least one single point SAR measurement is measured in each configuration. Single point time-sweep measurements will be performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state will be established remotely so that the device is not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe will remain stationary at the same position throughout the entire series of single point measurements for each combination.
4. Since the supported frequency span for LTE 2/4/5/17/38 falls completely within the supported frequency span for LTE 12/25/26/41/66, and both bands have the same target power and both LTE bands share the same transmission path, therefore standalone SAR was only assessed for LTE 12/25/26/41/66. The single point SAR time-sweep measurements were treated independently for each supported ACL frequency band. For the LTE 2/4/5/17/38 single point SAR measurement selected the highest measured SAR configuration and exposure condition of LTE 12/25/26/41/66.
5. The tuner state was established remotely through Wi-Fi so that the device is not moved for the entire series of single point SAR for the tuner states in each combination (band, mode, exposure conditions).

Antenna configuration	
Config*	Support transmit antenna and band
Config 0	ANT 0: GSM850, UMTS B5, LTE B5/B12/B13/B14/B17/B26/B71, NR n5 ANT 2: GSM1900, UMTS B2/B4, LTE B2/B4/B7/B25/B30/B66/B38/B41
Config 1	ANT 0: GSM1900, UMTS B2/B4, LTE B2/B4/B7/B25/B30/B66/B38/B41 ANT 1: GSM850, UMTS B5, LTE B5/B12/B13/B14/B17/B26/B71, NR n5

*Config 0 and 1 means output ports of power measurement for different antennas and bands.

17.1 Supplemental Head SAR results

RF exposure position						Average Value of Time Sweep (W/kg)												
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 40)	0	17	34	51	68	85	102	119	136	9	26	43
	GSM850	GPRS (4 Tx slots)	251	Left Cheek	0.239	0.283	0.277	0.262	0.111	0.119	0.181	0.271	0.224	0.129	0.122	0.099	0.205	0.157
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 61)	1	18	35	52	69	86	103	120	137	10	27	44
	GSM1900	GPRS (4 Tx slots)	810	Left Cheek	0.184	0.191	0.055	0.076	0.071	0.014	0.024	0.052	0.109	0.024	0.1	0.109	0.109	0.024
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 65)	2	19	36	53	70	87	104	121	138	11	28	45
	WCDMA II	RMC 12.2Kbps	9262	Left Cheek	0.336	0.341	0.068	0.172	0.067	0.277	0.315	0.229	0.229	0.134	0.277	0.239	0.22	0.2
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 88)	3	20	37	54	71	88	105	122	139	12	29	46
	WCDMA IV	RMC 12.2Kbps	1513	Left Cheek	0.368	0.377	0.304	0.056	0.133	0.199	0.085	0.209	0.066	0.247	0.304	0.304	0.094	0.123
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 44)	4	21	38	55	72	89	106	123	140	13	30	47
	WCDMA V	RMC 12.2Kbps	4132	Left Cheek	0.290	0.301	0.238	0.21	0.248	0.125	0.22	0.148	0.166	0.106	0.123	0.172	0.191	0.163
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 66)	5	22	39	56	73	90	107	124	141	14	31	48
	LTE Band 7	20M_QPSK_1_99	20850	Left Cheek	0.124	0.136	0.086	0.028	0.104	0.028	0.104	0.047	0.085	0.095	0.114	0.066	0.019	0.104
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 52)	6	23	40	57	74	91	108	125	142	15	32	49
	LTE Band 12	10M_QPSK_1_49	23095	Left Cheek	0.260	0.264	0.221	0.203	0.161	0.189	0.194	0.118	0.099	0.137	0.203	0.099	0.089	0.146
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 40)	7	24	41	58	75	92	109	126	143	16	33	50
Head (Ant0)	LTE Band 13	10M_QPSK_1_49	23230	Left Cheek	0.258	0.277	0.244	0.245	0.169	0.045	0.102	0.197	0.199	0.121	0.245	0.102	0.188	0.164
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 40)	8	25	42	59	76	93	110	127	0	17	34	51
	LTE Band 14	10M_QPSK_1_0	23330	Left Cheek	0.292	0.299	0.28	0.157	0.042	0.233	0.2	0.176	0.157	0.166	0.185	0.185	0.171	0.29
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 65)	9	26	43	60	77	94	111	128	1	18	35	52
	LTE Band 25	20M_QPSK_1_49	26140	Left Cheek	0.152	0.188	0.123	0.093	0.131	0.102	0.064	0.083	0.045	0.121	0.102	0.074	0.112	0.045
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 46)	10	27	44	61	78	95	112	129	2	19	36	53
	LTE Band 26	15M_QPSK_1_0	26865	Left Cheek	0.289	0.313	0.308	0.263	0.144	0.111	0.168	0.125	0.168	0.168	0.301	0.123	0.254	0.244
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 68)	11	28	45	62	79	96	113	130	3	20	37	54
	LTE Band 30	10M_QPSK_1_25	27710	Left Cheek	0.178	0.179	0.115	0.129	0.119	0.024	0.043	0.176	0.091	0.129	0.167	0.119	0.11	0.1
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 66)	12	29	46	63	80	97	114	131	4	21	38	55
	LTE Band 41	20M_QPSK_1_49	39750	Left Cheek	0.087	0.090	0.033	0.048	0.029	0.038	0.048	0.019	0.048	0.048	0.048	0.01	0.029	0.03
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 91)	13	30	47	64	81	98	115	132	5	22	39	56
	LTE Band 66	20M_QPSK_1_0	132572	Left Cheek	0.283	0.293	0.146	0.23	0.116	0.173	0.087	0.163	0.087	0.116	0.163	0.03	0.078	0.23
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 45)	14	31	48	65	82	99	116	133	6	23	40	57
	LTE Band 71	20M_QPSK_1_0	133322	Left Cheek	0.230	0.251	0.201	0.164	0.145	0.155	0.193	0.155	0.122	0.193	0.169	0.174	0.16	0.041
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 40)	15	32	49	66	83	100	117	134	7	24	41	58
	FR1 n5	20M_BPSK_50_28	167300	Left Cheek	0.175	0.295	0.249	0.163	0.154	0.163	0.08	0.154	0.116	0.078	0.173	0.097	0.14	0.135

RF exposure position						Average Value of Time Sweep (W/kg)																			
Head (Ant1)	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 22)	0	8	16	24	32	7	15	23	31	6	14	22	30	5	13	21	29	4	8
	GSM850	GPRS (4 Tx slots)	251	Right Cheek	0.591	0.552	0.542	0.523	0.442	0.289	0.251	0.449	0.136	0.445	0.16	0.321	0.321	0.512	0.35	0.445	0.15	0.264	0.493	0.497	0.347
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 24)	1	9	17	25	0	8	16	24	32	7	15	23	31	6	14	22	30	5	4
	WCDMA V	RMC 12.2Kbps	4132	Right Cheek	0.536	0.491	0.432	0.447	0.466	0.486	0.391	0.444	0.479	0.279	0.127	0.16	0.318	0.451	0.422	0.16	0.346	0.17	0.289	0.299	0.483
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 0)	2	10	18	26	1	9	17	25	0	8	16	24	32	7	15	23	31	6	
	LTE Band 12	10M_QPSK_1_49	23095	Right Cheek	0.614	0.648	0.625	0.636	0.638	0.569	0.625	0.639	0.632	0.6	0.549	0.639	0.639	0.618	0.09	0.636	0.644	0.627	0.185	0.632	
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 0)	3	11	19	27	2	10	18	26	1	9	17	25	0	8	16	24	32	7	
	LTE Band 13	10M_QPSK_1_49	23230	Right Cheek	0.523	0.484	0.437	0.454	0.466	0.41	0.426	0.442	0.473	0.437	0.438	0.456	0.464	0.454	0.374	0.434	0.455	0.463	0.062	0.44	
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 17)	4	12	20	28	3	11	19	27	2	10	18	26	1	9	17	25	0	8	
	LTE Band 14	10M_QPSK_1_0	23330	Right Cheek	0.551	0.620	0.613	0.615	0.562	0.255	0.616	0.611	0.577	0.318	0.11	0.619	0.597	0.369	0.208	0.388	0.284	0.569	0.493	0.615	
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 27)	5	13	21	29	4	12	20	28	3	11	19	27	2	10	18	26	1	9	8
	LTE Band 26	15M_QPSK_1_0	26865	Right Cheek	0.571	0.498	0.456	0.473	0.492	0.452	0.493	0.239	0.125	0.477	0.439	0.048	0.248	0.306	0.439	0.277	0.486	0.13	0.096	0.333	0.463
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 0)	6	14	22	30	5	13	21	29	4	12	20	28	3	11	19	27	2	10	1
	LTE Band 71	20M_QPSK_1_0	133322	Right Cheek	0.409	0.477	0.378	0.314	0.207	0.18	0.351	0.475	0.313	0.446	0.313	0.313	0.418	0.123	0.094	0.142	0.275	0.4	0.402	0.388	0.472
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 23)	7	15	23	31	6	14	22	30	5	13	21	29	4	12	20	28	3	11	
	FR1 n5	20M_BPSK_1_1	167300	Right Cheek	0.593	0.500	0.447	0.46	0.489	0.316	0.355	0.365	0.365	0.308	0.488	0.308	0.184	0.336	0.498	0.393	0.336	0.089	0.212	0.441	

RF exposure position						Average Value of Time Sweep (W/kg)																			
Head (Ant2)	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 43)	0	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135			
	GSM1900	GPRS (4 Tx slots)	661	Left Cheek	0.098	0.125	0.001	0.102	0.001	0.085	0.102	0.121	0.001	0.102	0.101	0.105	0.066	0.001	0.098	0.001	0.083	0.095			
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 44)	1	10	19	28	37	46	55	64	73	82	91	100	109	118	127	136			
	WCDMA II	RMC 12.2Kbps	9262	Left Cheek	0.260	0.220	0.067	0.187	0.082	0.162	0.001	0.219	0.062	0.174	0.187	0.197	0.150	0.214	0.001	0.159	0.163	0.182			
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 98)	2	11	20	29	38	47	56	65	74	83	92	101	110	119	128	137			
	WCDMA IV	RMC 12.2Kbps	1312	Left Cheek	0.183	0.215	0.070	0.210	0.088	0.155	0.001	0.178	0.084	0.182	0.208	0.211	0.187	0.191	0.051	0.201	0.177	0.16			
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 16)	3	12	21	30	39	48	57	66	75	84	93	102	111	120	129	138			
	LTE B7	20M_QPSK_1_99	20850	Right Cheek	0.339	0.324	0.164	0.108	0.220	0.172	0.182	0.164	0.237	0.320	0.263	0.085	0.161	0.079	0.248	0.124	0.176	0.101			
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 43)	4	13	22	31	40	49	58	67	76	85	94	103	112	121	130	139			
	LTE B25	20M_QPSK_1_99	26340	Right Cheek	0.206	0.188	0.163	0.145	0.116	0.146	0.152	0.165	0.110	0.155	0.137	0.001	0.144	0.125	0.084	0.001	0.146	0.136			
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 38)	5	14	23	32	41	50	59	68	77	86	95	104	113	122	131	140			
	LTE B30	10M_QPSK_1_0	27710	Right Cheek	0.197	0.230	0.145	0.088	0.208	0.170	0.152	0.095	0.202	0.154	0.138	0.089	0.137	0.062	0.132	0.096	0.115	0.094			
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 16)	6	15	24	33	42	51	60	69	78	87	96	105	114	123	132	141			
	LTE B41	20M_QPSK_1_99	40185	Right Cheek	0.216	0.181	0.073	0.059	0.103	0.086	0.071	0.055	0.098	0.083	0.069	0.148	0.079	0.149	0.133	0.045	0.060	0.053			
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 120)	7	16	25	34	43	52	61	70	79	88	97	106	115	124	133	142			
	LTE B66	20M_QPSK_1_0	132322	Left Cheek	0.224	0.251	0.225	0.001	0.133	0.172	0.158	0.237	0.157	0.206	0.206	0.133	0.083	0.225	0.139	0.231	0.250	0.249			

17.2 Supplemental Body SAR results

RF exposure position						Average Value of Time Sweep (W/kg)												
Body (Ant0)	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 40)	0	17	34	51	68	85	102	119	136	9	26	43
	GSM850	GPRS (4 Tx slots)	189	Left Side	0.244	0.319	0.111	0.22	0.279	0.269	0.107	0.146	0.212	0.098	0.088	0.241	0.307	0.203
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 61)	1	18	35	52	69	86	103	120	137	10	27	44
	GSM1900	GPRS (4 Tx slots)	810	Back	0.354	0.371	0.288	0.162	0.209	0.228	0.19	0.304	0.171	0.276	0.228	0.352	0.066	0.304
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 61)	2	19	36	53	70	87	104	121	138	11	28	45
	WCDMA II	RMC 12.2Kbps	9538	Back	0.598	0.613	0.465	0.16	0.227	0.493	0.208	0.065	0.141	0.236	0.303	0.312	0.198	0.331
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 91)	3	20	37	54	71	88	105	122	139	12	29	46
	WCDMA IV	RMC 12.2Kbps	1513	Left Side	0.424	0.467	0.388	0.246	0.198	0.036	0.408	0.303	0.37	0.427	0.303	0.465	0.341	0.36
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 40)	4	21	38	55	72	89	106	123	140	13	30	47
	WCDMA V	RMC 12.2Kbps	4182	Left Side	0.240	0.241	0.107	0.207	0.181	0.114	0.2	0.162	0.095	0.219	0.067	0.086	0.209	0.019
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 66)	5	22	39	56	73	90	107	124	141	14	31	48
	LTE Band 7	20M_QPSK_1_99	20850	Left Side	0.282	0.319	0.225	0.307	0.165	0.06	0.088	0.165	0.288	0.146	0.146	0.307	0.146	0.25
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 48)	6	23	40	57	74	91	108	125	142	15	32	49
	LTE Band 12	10M_QPSK_1_49	23095	Back	0.127	0.361	0.281	0.333	0.264	0.302	0.102	0.207	0.121	0.064	0.064	0.092	0.111	0.226
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 9)	7	24	41	58	75	92	109	126	143	16	33	50
	LTE Band 13	10M_QPSK_1_49	23230	Back	0.304	0.318	0.296	0.227	0.131	0.135	0.026	0.245	0.112	0.14	0.292	0.102	0.235	0.226
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 40)	8	25	42	59	76	93	110	127	0	17	34	51
	LTE Band 14	10M_QPSK_1_0	23330	Back	0.350	0.352	0.288	0.311	0.264	0.16	0.217	0.19	0.255	0.207	0.321	0.102	0.35	0.16
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 65)	9	26	43	60	77	94	111	128	1	18	35	52
	LTE Band 25	20M_QPSK_1_99	26340	Left Side	0.586	0.606	0.441	0.261	0.328	0.394	0.48	0.28	0.166	0.594	0.48	0.052	0.328	0.309
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 42)	10	27	44	61	78	95	112	129	2	19	36	53
	LTE Band 26	15M_QPSK_1_0	26865	Back	0.311	0.324	0.317	0.258	0.208	0.246	0.132	0.255	0.322	0.036	0.132	0.117	0.065	0.17
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 68)	11	28	45	62	79	96	113	130	3	20	37	54
	LTE Band 30	10M_QPSK_1_25	27710	Back	0.594	0.620	0.347	0.404	0.27	0.461	0.261	0.451	0.423	0.318	0.451	0.366	0.213	0.061
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 66)	12	29	46	63	80	97	114	131	4	21	38	55
	LTE Band 41	20M_QPSK_1_49	39750	Left Side	0.204	0.222	0.166	0.032	0.099	0.051	0.165	0.099	0.042	0.165	0.08	0.165	0.175	0.061
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 101)	13	30	47	64	81	98	115	132	5	22	39	56
	LTE Band 66	20M_QPSK_1_0	132072	Back	0.467	0.488	0.261	0.104	0.313	0.256	0.361	0.361	0.275	0.389	0.38	0.446	0.256	0.342
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 48)	14	31	48	65	82	99	116	133	6	23	40	57
	LTE Band 71	20M_QPSK_1_0	133322	Back	0.324	0.326	0.311	0.157	0.181	0.188	0.21	0.295	0.286	0.124	0.134	0.286	0.097	0.134
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 15)	15	32	49	66	83	100	117	134	7	24	41	58
	FR1 n5	20M_BPSK_50_28	167300	Back	0.281	0.297	0.278	0.243	0.2	0.143	0.266	0.057	0.095	0.095	0.162	0.209	0.181	0.124

RF exposure position						Average Value of Time Sweep (W/kg)																			
Body (Ant1)	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 27)	0	8	16	24	32	7	15	23	31	6	14	22	30	5	13	21	29	4	8
	GSM850	GPRS (4 Tx slots)	189	Back	0.230	0.196	0.175	0.137	0.132	0.099	0.165	0.08	0.184	0.07	0.099	0.175	0.108	0.156	0.165	0.108	0.089	0.137	0.137	0.155	0.188
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 27)	1	9	17	25	0	8	16	24	32	7	15	23	31	6	14	22	30	5	4
	WCDMA V	RMC 12.2Kbps	4132	Back	0.223	0.189	0.182	0.168	0.13	0.158	0.044	0.158	0.177	0.139	0.082	0.177	0.092	0.101	0.035	0.044	0.139	0.091	0.13	0.166	0.182
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 5)	2	10	18	26	1	9	17	25	0	8	16	24	32	7	15	23	31	6	
	LTE Band 12	10M_QPSK_1_49	23095	Left Side	0.318	0.238	0.213	0.218	0.169	0.117	0.15	0.026	0.179	0.169	0.074	0.103	0.217	0.15	0.207	0.16	0.179	0.122	0.188	0.207	
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 12)	3	11	19	27	2	10	18	26	1	9	17	25	0	8	16	24	32	7	
	LTE Band 13	10M_QPSK_1_49	23230	Back	0.217	0.213	0.212	0.211	0.167	0.11	0.12	0.128	0.177	0.015	0.101	0.063	0.144	0.129	0.101	0.11	0.196	0.167	0.205	0.205	
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 17)	4	12	20	28	3	11	19	27	2	10	18	26	1	9	17	25	0	8	
	LTE Band 14	10M_QPSK_1_0	23330	Back	0.225	0.255	0.222	0.177	0.11	0.072	0.167	0.243	0.129	0.167	0.139	0.089	0.177	0.129	0.129	0.243	0.186	0.186	0.253	0.177	
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 24)	5	13	21	29	4	12	20	28	3	11	19	27	2	10	18	26	1	9	8
	LTE Band 26	15M_QPSK_1_0	26865	Back	0.249	0.207	0.167	0.155	0.205	0.099	0.034	0.138	0.176	0.119	0.062	0.062	0.186	0.109	0.205	0.182	0.138	0.11	0.15	0.132	0.176
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 0)	6	14	22	30	5	13	21	29	4	12	20	28	3	11	19	27	2	10	1
	LTE Band 71	20M_QPSK_1_0	133322	Left Side	0.234	0.207	0.167	0.1	0.043	0.148	0.081	0.167	0.119	0.034	0.205	0.119	0.195	0.043	0.091	0.167	0.186	0.119	0.205	0.072	0.176
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 23)	7	15	23	31	6	14	22	30	5	13	21	29	4	12	20	28	3	11	
	FR1 n5	20M_BPSK_50_28	167300	Back	0.193	0.169	0.153	0.158	0.168	0.088	0.157	0.167	0.129	0.043	0.1	0.091	0.115	0.062	0.168	0.062	0.081	0.11	0.11	0.119	

RF exposure position						Average Value of Time Sweep (W/kg)																	
Body (Ant2)	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 41)	0	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	
	GSM1900	GPRS (4 Tx slots)	661	Bottom Side	0.450	0.433	0.122	0.405	0.109	0.302	0.403	0.432	0.081	0.322	0.4	0.395	0.237	0.113	0.384	0.079	0.298	0.355	
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 44)	1	10	19	28	37	46	55	64	73	82	91	100	109	118	127	136	
	WCDMA II	RMC 12.2Kbps	9538	Back	0.678	0.662	0.262	0.493	0.243	0.530	0.114	0.633	0.199	0.537	0.550	0.482	0.441	0.644	0.116	0.429	0.372	0.414	
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 120)	2	11	20	29	38	47	56	65	74	83	92	101	110	119	128	137	
	WCDMA IV	RMC 12.2Kbps	1513	Bottom Side	0.602	0.588	0.242	0.578	0.261	0.432	0.132	0.519	0.250	0.506	0.546	0.563	0.501	0.531	0.132	0.525	0.450	0.414	
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 16)	3	12	21	30	39	48	57	66	75	84	93	102	111	120	129	138	
	LTE B7	20M_QPSK_50_50	21350	Bottom Side	0.664	0.573	0.410	0.286	0.553	0.464	0.435	0.277	0.412	0.453	0.512	0.226	0.407	0.208	0.462	0.322	0.472	0.269	
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 44)	4	13	22	31	40	49	58	67	76	85	94	103	112	121	130	139	
	LTE B25	20M_QPSK_50_50	26590	Bottom Side	0.602	0.801	0.724	0.605	0.472	0.675	0.629	0.703	0.438	0.685	0.654	0.098	0.665	0.529	0.305	0.152	0.560	0.600	
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 1)	5	14	23	32	41	50	59	68	77	86	95	104	113	122	131	140	
	LTE B30	10M_QPSK_1_0	27710	Back	0.599	0.539	0.366	0.236	0.505	0.418	0.381	0.248	0.501	0.385	0.336	0.234	0.352	0.155	0.321	0.247	0.284	0.232	
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 85)	6	15	24	33	42	51	60	69	78	87	96	105	114	123	132	141	
	LTE B41	20M_QPSK_1_49	41055	Back	0.576	0.504	0.216	0.187	0.310	0.284	0.209	0.179	0.304	0.271	0.196	0.443	0.242	0.476	0.484	0.121	0.187	0.173	
	Band	Mode	Channel	Test Position	Measured 1g SAR (W/kg)	Auto-Tune (State 133)	7	16	25	34	43	52	61	70	79	88	97	106	115	124	133	142	
	LTE B66	20M_QPSK_50_50	132572	Bottom Side	0.641	0.727	0.722	0.114	0.470	0.571	0.585	0.719	0.540	0.648	0.691	0.438	0.652	0.679	0.512	0.668	0.727	0.709	

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18. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg and highest measured 10-g SAR is less 3.75W/kg. Therefore, the measurement uncertainty table is not required in this report.

Declaration of Conformity:
The test results with all measurement uncertainty excluded is presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

19. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, Sep 2013

[4] SPEAG DASY System Handbook

[5] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

[6] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015

[7] FCC KDB 648474 D04 v01r03, “SAR Evaluation Considerations for Wireless Handsets”, Oct 2015.

[8] FCC KDB 941225 D01 v03r01, “3G SAR MEAUREMENT PROCEDURES”, Oct 2015

[9] FCC KDB 941225 D05 v02r05, “SAR Evaluation Considerations for LTE Devices”, Dec 2015

[10] FCC KDB 941225 D05A v01r02, “Rel. 10 LTE SAR Test Guidance and KDB Inquiries”, Oct 2015

[11] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.

[12] FCC KDB 941225 D07 v01r02, " SAR Evaluation Procedures for UMPC Mini-Tablet Devices", Oct 2015.

[13] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.

[14] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.